Scientific American.

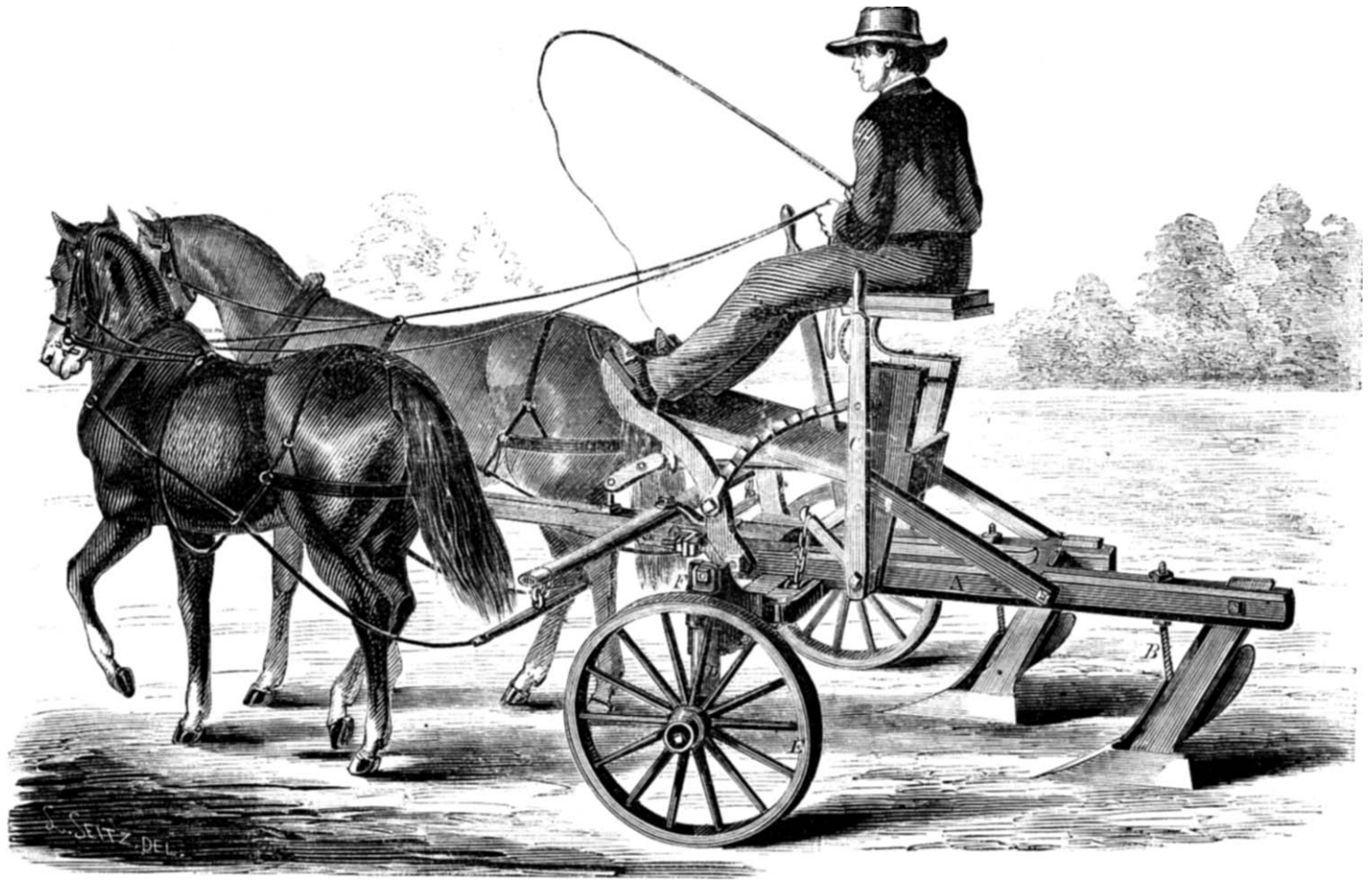
A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. XIII---No. 6. (NEW SERIES.) NEW YORK, AUGUST 5, 1865. $3 PER ANNUM IN ADVANCE.

Improved Gang Plow.

When the great Western prairies were opened by agriculturists, the necessity for the employment of some speedy and certain method for tilling the soil was apparent, and accordingly gang plows and cultivators were introduced and used with great advantage.

The accompanying engraving represents a new improvement in this class of machines, which consists



BLACK'S GANG PLOW.

n a method for raising and lowering the plow so as to increase or diminish the depth of the furrow at will. This is done as follows:—The plows are set in the beam, A, to which they are securely fastened and braced. The rod, B, serves to regulate the position of the plow share or its relation with the beam, and the nuts on this rod are to raise or lower the point as desired, so as to cause it to work to advantage. The depth of the furrow is regulated by the lever, C. One side of the frame is fastened to an upright arm, D; this arm carries the near wheel, E, and the axle of the wheels is at one end formed into a jaw, F, which embraces this upright arm, and slides up and down on it, when the lever, C, is worked. This throws the plows in or out, so as to diminish or increase the depth of the furrow. The plows can be raised entirely clear if desired, when proceeding to or from the field, and the width of the furrow can also be regulated by a screw, G, which changes the line of draught from the pole, thereby causing the plows to take a wider or narrower slice.

A patent has been applied for this improvement through the Scientific American Patent Agency by J. F. & W. L. Black, of Lancaster, Ill. Address them at that place for further information.

REPORT OF THE COMMITTEE ON HEAVY ORDNANCE.

Under the head of "heavy ordnance" your committee would call attention to three classes of guns: First, those made entirely of cast iron; second, those made of cast iron and banded with wrought iron; and third, those made entirely of wrought iron. Of the first class are the guns generally known as the Dahlgren gun and the Rodman gun. Of the second class is the Parrott gun. Of the third class is the Ames gun. There is still another gun, known as the Wiard steel gun, but as it does not come, so far as your committee have been able to learn, under the head of "heavy ordnance," they have not deemed it necessary to devote much attention to it.

THE RODMAN GUN.

The Rodman gun, while having to some extent its peculiarity of form, is principally distinguished by the mode adopted in its manufacture, which is an invention of Major T. J. Rodman. The casting is made around a hollow core, or core-barrel, as it is termed, into which is introduced a stream of cold water, the outside of the casting being kept heated until the cooling from the interior reaches the outer portion of the mass of metal forming the casting. This mode of manufacture, it is claimed, ensures two important advantages over the old method of casting the gun solid and then boring it out. The strain upon the metal produced by cooling in large masses is reversed, rendering the gun less liable to burst from the explosion of the powder in it; and a much greater degree of hardness is given to the interior surface, rendering the gun less liable to abrasion in the bore by the passage of the projectile along it, and the action of the gasses of the powder upon the metal. It is generally held by the witnesses that no effective gun of large calibre can be made of cast-iron except upon the Rodman principle.

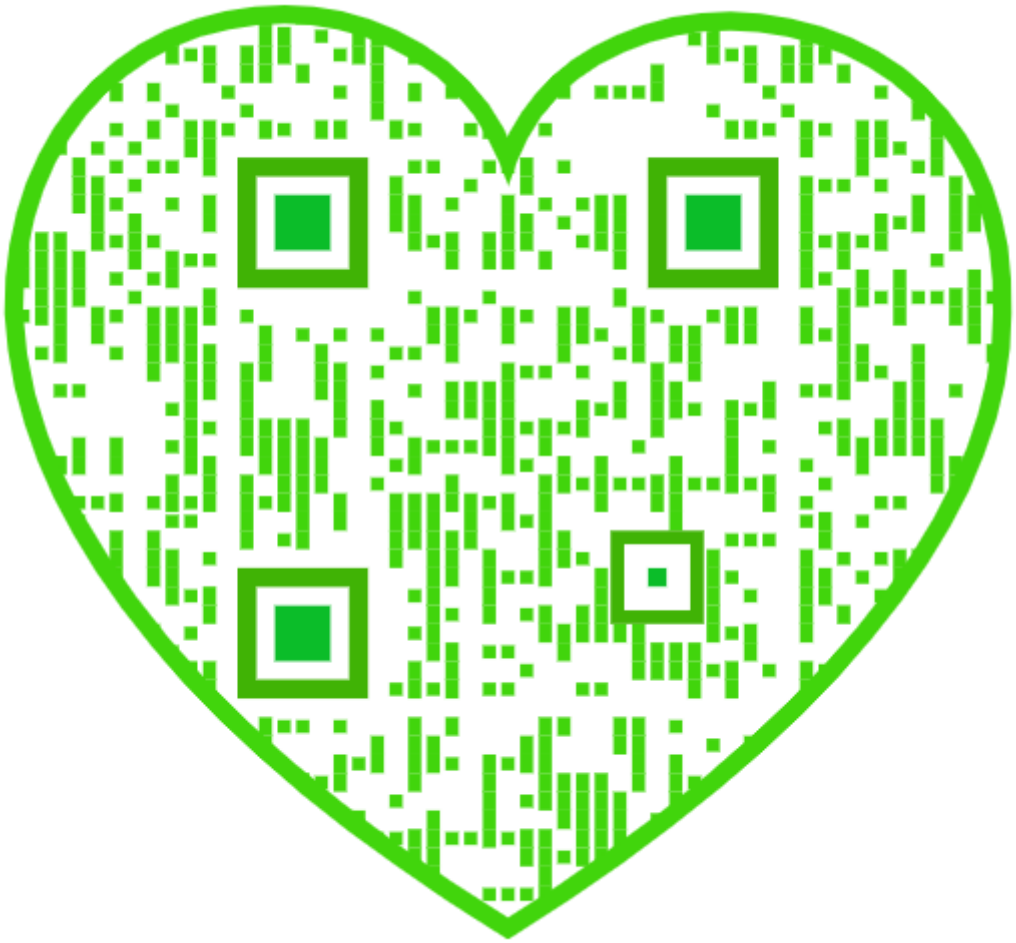
THE DAHLGREN GUN.

The Dahlgren gun is the invention of Rear-Admiral John A Dahlgren, and is distinguished by its exterior form. The plan adopted to avoid the strain consequent upon cooling a solid casting of large size from the outside is to make the castings considerably larger than would otherwise be needed to produce a gun of the required size, anneal it after cooling, and then turn it down to the proper size and form. But the Dahlgren guns of the largest calibre are now being manufactured upon the Rodman principle.

These two guns are the only guns of large calibre, made entirely of cast-iron, which are now used in the service. It will be seen from the testimony that officers of the navy generally prefer the Dahlgren gun for naval service, while officers of the army express a preference for the Rodman gun. Both of these guns would appear, from the testimony, to be the best cast-iron guns now known to any service. They are generally smooth-bore guns, but few, if any, of the larger calibre being rifled.

THE PARROTT GUN.

The rifled gun of large calibre, employed almost



wholly in the army and navy service, is the gun invented by Robert C. Parrott. It is composed of a cast iron cylinder, with a wrought iron jacket or band shrunk upon the breech of the gun, in order to strengthen it about the seat of discharge. The cast iron cylinder of this gun was formerly cast solid, and then bored out; but latterly those of the largest calibre are cast upon the Rodman principle.

The introduction of the turreted iron-clads into our naval service impressed upon the Department the necessity for guns of large calibre. Those vessels carrying but few guns, and being designed to operate against other iron-clads, as well as to resist the effect of opposing batteries, it was considered important to have guns throwing projectiles, shot or shell, of the greatest possible weight, and guns of as large calibre as fifteen inches were designed and constructed principally for use on turreted vessels. The result of the contest between the United States iron-clad Weehawken and the rebel iron-clad Atlanta shows the remarkable effect of heavy projectiles upon iron-clad vessels.

THE BURSTING OF PARROTTS.

The bursting of these guns is generally attributed to the explosion of shells prematurely within the bore of the gun. The opinion of Mr. Parrott in regard to the cause or causes of premature explosion of the shells is as follows:

"It has been a matter of much concern with me, and I would rather not make a gun than have any accident occur. I ascribe the difficulty to the friction of the powder in the shell itself. At first it was natural enough to ascribe the difficulty to bad shells, bad castings, bad fusees, etc.; but, upon full trial, it appears above all question that the difficulty arises from the powder explod.ng in the shell within the gun by friction caused by the striking of the powder against the inside of the shell. A 300-pounder shell is ten inches in diameter; a round shell of that diameter holds about three pounds of powder. My 300 pounder shell holds about seventeen pounds of powder.

"Now, when you fire a gun and strike the butt of a shell suddenly with the immense force of the charge, there is a reaction of the powder within the shell against the bottom of the shell; and if there is any roughness so as to cause friction at the bottom, the powder will be exploded in the shell while it is within the gun. Thinking that to be the case, I have for a long time been endeavoring to coat the inside of the shell with varnish or lacker, and now I am able to do so with entire success. A great many people were skeptical about it, and precautions have not been taken in regard to it as quickly as they might have been. I now melt together rosin, tallow and brown soap, forming a thin liquid mixture, and pour it into my shells and pour it out again, leaving a coating on the inside which covers over the rough iron, and when that is done I find the shells can be fired without premature explosion.

"Some two months ago Captain Temple, one of the officers of this very fleet of Porter's, came to the foundry, and became aware of this fact. He had two one hundred pounders on board his vessel; when he got back he found that his shells had no such coating, and he immediately set to work and lined them with asphaltum, etc. He fired his guns fifty or sixty times each during the engagement, and not a single shell exploded prematurely in his guns; while in some of the other vessel around him shells were exploded prematurely and thrown out of the guns in fragments. That is so stated in a letter of his, which I saw yesterday."

THE AMES GUN.

In view of these considerations, your committee desire to refer, somewhat at length, to a wrought-iron gun, which to them seems to possess those qualities of strength, durability, and safety, which are so very desirable. It is the invention of Horatio Ames.

The mode of manufacturing this gun is described by the board in their report as follows:

"The gun is built up from the cascabel on the end of a long cylindrical port bar. The end of this bar is first enlarged by welding pieces around it. It is then enlarged still further by placing two rings on the end, one over the other, concentrically, and welding them there in succession. Against the end of the cylinder, thus increased to twenty-eight (28) inches in diameter, is welded a circular plate or disk, also twenty-eight inches in diameter and four inches thick.

"The disk is composed of a centre-piece, ten inches in diameter, surrounded by two concentric rings, one outside of the other, all accurately fitted together by turning. The bottom of the bore terminates against this disk. Upon this disk is welded a ring of twenty-eight inches exterior diameter, four inches interior diameter, and five inches thick, compounded of three concentric rings, accurately fitted together by turning. The inner one is ten inches in exterior diameter, and about six inches in thickness, so that its ends project on either side about half an inch beyond the faces of the other two rings. This is intended to secure a perfect weld next the bore, and force out the slug. Other compound rings, make in the same manner, are welded on one after the other, until the gun is of the required length. In making the compound rings for the small part of the gun, between the trunnions and muzzle, the outer ring is omitted.

"The gun remains in a horizontal position during the process of construction, and is handled by means of the bar projecting from the cascabel. The welding on of the disk and rings is done with a hammer worked horizontally by steam; a hammer working vertically is also used against the sides of the piece. The inner ring of the compound rings is made from a block six inches by ten inches, by boring a hole five inches in diameter through it, and turning off the corners. The fibres and laminæ of the metal is at right angles to the axis of the gun. The centre and outer rings are made like a tire by bending the bars and welding the ends together, thus placing the layers of the metal in cylindrical surfaces. The trunnions are attached by being screwed into the sides of the piece three inches."

In regard to the projectiles and charges used, the board report:—

"Considerable delay and many interruptions in the progress of the trials were occasioned by the want of suitable projectiles. Those of the Hotchkiss pattern, which have been officially proscribed for rifles of a large cailbre, on account of their excessive strain upon the gun, were almost exclusively used. In weight they varied from 104 to 127 pounds.

"The powder used was what is known as No. 7 experimental powder, giving a pressure of 57,000 pounds per square inch in an eight-inch gun. The charges were varied increasingly from thirteen to thirty pounds, although it was frequently necessary to reduce the higher charges in order to accommodate the projectiles. from which the packing would often strip, or the cap break, even with comparatively low charges."

As the result of the examination, the board report:—

"It is the unanimous opinion of the board that Ames's wrought-iron guns possess, to a degree never before equalled by any cannon of equal weight offered to our service, the essential qualities of great lateral and longitudinal strength, and great powers of endurance under heavy charges; and that they are not liable to burst explosively and without warning, even when fired under very high charges; and that they are well adapted to the wants of the service generally, but especially whenever long ranges and high velocities are required. It is also the unanimous opinion of the board that Ames's seven-inch guns, of which he has now fifteen nearly finished, possess sufficient weight and strength to receive an eight-inch bore, and even greater, although not heavy enough for a ten-inch bore."

And to show more fully their confidence in the strength and durability of the gun they had it tested by firing it seven hundred times. The board—

"Further recommend that the gun which they have tried be rebored to eight inches and rifled, and then submitted to another series of tests similar to these through which it has just passed, to be then cut up for examination."

COST.

In regard to the cost of these several guns, the price of a 100-pounder Parrott gun is $1,300; a 200-pounder about $2,000; a 300-pounder from $4,500 to $5,000. Of the cast-iron guns, the contract price for the 15-inch gun, as stated by Mr. Fox, is $7,500; those of smaller calibre in proportion. The Ames gun would cost about a dollar a pound, or about-$12,000 for a 100-pounder; $17,000 for a 150-pounder, and $28,000 for a 200-pounder.

LAYING THE ATLANTIC CABLE.

By the time that this notice reaches the public the Great Eastern will probably have begun her eventful voyage. All that the experience of previous attempts could suggest, all that the most earnest and painstaking foresight could anticipate, has been done; everything now rests with the weather. In the four great divisions on which the success of the undertaking may be said to turn—namely, the cable itself, its stowage, the ship, and its engines, nothing apparently has been overlooked.

ELECTRICAL CONDITION OF THE CABLE.

As regards the cable, it still remains in the same perfect state as when it was tested at the works, and, in fact, its whole electrical condition is such as the largest shareholder in the undertaking would desire for it. Its various lengths are now and have been for some days past joined up, and twice every day, morning and evening, messages are sent through. The time which these occupy in transmission shows its condition to be as nearly invariable as possible. Last week experiments were tried with a variety of instruments to ascertain the highest rate of working speed with a low battery power. The best of these instruments was, it is said, one invented by Mr. Varley, with which it was found easy to work through the whole length of two thousand five hundred miles at an average rate of about four words a minute. At this speed the signals were remarkably clear and distinct, and it is still claimed that it is possible to devise instruments which can raise the rate from four words a minute to as high as eight or even ten. This, however, remains to be proved.

FOUR WORDS THE MINIMUM RATE OF TRANSMISSION.

Yet even in the absence of such instruments there can be no doubt but that the gradually improving skill of the signalling clerks, as they become more accustomed to work through the wire, will, with the bettered electrical condition of the cable when at the bottom of the Atlantic, soon make four words a minute the minimum of what can be accomplished by this telegraph. The insulating properties of the gutta percha are always increased by external compression. When sunk in the tremendous depths beneath which the cable is to be submerged it is calculated that the weight of water above it will give a pressure of about two and three-quarter tuns to the circular inch. Under this enormous weight the bulk of the insulating core will probably be reduced one-third, and in fact, so compressed on all sides as to most materially improve both "conductivity" and insulation. Such aids to signalling excellence, when coupled with the benefit which the cable is certain to derive from the unvarying temperature at the bottom of the ocean, are likely to do more towards increasing the rate at which messages can be sent than any instrument which has yet been brought forward.

HOW THE PROGRESS OF THE WORK MAY BE KNOWN ON SHORE.

During the time of paying out signals will be sent to Valentia for every fifty miles of the cable sunk, and for every fifty miles the Great Eastern runs. Thus it will be perfectly easy for the public to follow her course on any map, and know precisely by the difference between the distance traversed and the length of the cable sunk the amount of slack that is being paid out. This slack, as it is called, will afford the best index to the state of the weather and the way in which the Great Eastern is doing her work. No less than thirty-three per cent of the entire length of the cable has been allowed for slack, or waste, as we may better call it. If all goes well not more than ten per cent of this will be used; but, on the other hand, with bad weather or irregular going of the Great Eastern, every coil will go over the stern to the very last mile. So far as regards the cable.

STOWAGE OF THE GREAT EASTERN.

As concerns the *Great Eastern* herself, Captain Anderson and his officers have taken every possible precaution as to her stowage and general equipment. From outside she seems at the first glance to be almost alarmingly deep in the water. It is, however, less her actual depth which creates this unpleasant impression than the appearance which she presents of "sagging" amidships. Of course, this awkward and most unpleasant appearance is merely an optical delusion, no doubt created by her deep trim astern. There is a difference of nearly five feet between her trim fore and aft. Astern she draws thirty-five feet

of water, while under the bows it is only thirty. Levels have been carefully taken to ascertain if any deflection was perceptible under the ponderous weight she bears. No sign of change, however, has been observable. Before any of the cable was coiled on board one thousand four hundred tuns of water were pumped into the aftermost compartments of the ship, and one thousand one hundred tuns into the compartments most forward. Under these weights at her extremities the *Great Eastern* deflected nearly an inch and a half, recovering herself directly the water was pumped out. This proof of strength is, of course, very satisfactory. It would have been more so, however, if the test strains employed bore a closer relation to the enormous weights which she has now on board. All told, the *Great Eastern* will leave the Thames with rather more than twenty-five thousand tuns in her, a burden almost as great as the whole fleet with which Nelson fought the battle of Trafalgar could have carried.

CHANCES OF A ROLL.

All the weights are stowed as high as possible to counteract to the utmost the *Great Eastern's* most unpleasant tendency to roll. It is popularly supposed that this ship is almost immovable in any sea. Against a head wind she is certainly very steady, though she can pitch as well as other vessels, and has, in the Atlantic, aye, and even in the Channel, taken in heavy seas over her bows. Nevertheless, in a beam sea she is particularly "lively," and rolls just in proportion to her size—that is to say she rolls very much indeed. Her motion is easy, slow and deep, occupying about fifteen seconds. To made her do this, however, a beam sea of fifteen seconds interval between the waves is necessary, and such a sea is rare even in the Atlantic. Of course, all her system of stowage proceeds on the theory that high-placed weights will prevent her rolling. The Agamemnon was stowed after the same fashion on the occasion of the last Atlantic expedition, and our readers will probably recollect that on that occasion the great line-of-battle ship rolled as if she was never coming up again.

ABOVE DECK.

All the running gear has been removed from the rigging, so as to obviate the possibility of anything falling from aloft into the paying-out machinery. Some of the yards have been lowered, and scarcely a spar has sails. The village of huts and workshops has disappeared from her decks, but their places have been more than occupied by shanty coverings of various kinds, leading troughs, buoy rope wheels, gigantic buoys for floating the cable at various depths from six hundred to three thousand fathoms, and, above all, the whole space of what in other vessels would be the quarterdeck is occupied by the paying-out apparatus. The praise which was at first bestowed upon the simple efficiency of this machinery has been amply vindicated by its every day working. As far as can be known from mere preliminary trials it is absolutely perfect.

ADAPTING THE ENGINES.

Both screw and paddle engines are reported to be in very good condition. Every part of each, of course has been carefully overhauled and examined. From the great depth of the vessel it has been necessary to considerably reduce, or rather reef in, the paddle floats. One-third has been taken off each float, and the two remaining thirds brought as close to the inner ring as possible. On the voyage round to Valentia both screw and paddles will be used, while during the submergence of the cable the *Great Eastern* will depend mainly on her screw. The paddles, however, will be kept under steam, turning easily to save the screw the labor of driving them as well as the ship. This will be the more necessary, as from the position of one of the cable coils over two of the screw boilers it has been found necessary to shut off the latter entirely from steam, thus reducing the power of the screw engines about one-fifth—namely, from 1,500 to 1,200 horse power. Another reason for the paddle engines, being kept going is the assistance they may be required to give in keeping the vessel on her course against side winds.

PREPARING FOR A "KINK."

They will be also used to reverse the ship at once in case of any serious "kink" occuring in the cable tanks. The experience of submarine telegraphy points always to one danger—that of stopping the paying out simultaneously with the stoppage of the vessel. The very rapid downward course of the wire being suddenly arrested at its point of departure over the paying-out wheel generally causes instant breakage of the rope—an accident which is always as sudden as it is irremediable. In case of any stoppage being necessary, therefore, the *Great Eastern* will be at once reversed, so as to back her slowly over the line where the cable lies until it hangs almost vertically from the stern. During the time the *Great Eastern* has been anchored at the Nore the swell, and especially within the last few days, has often been so great as to prevent the service tugs from Sheerness coming alongside. On some days, indeed, the sea has run very high, yet always without making the slightest impression on the big ship, which, from first to last, has remained as absolutely immovable as if she were aground.

HOW TO SKIN AND STUFF BIRDS.

As many persons have made inquiry for some simple and efficient method of skinning and stuffing birds, we publish herewith a circular on the subject of "Collections of Animals injurious to Agriculture," which has recently been put forth by the State Agricultural Society of California. The first step is skinning, which applies both to birds and animals:—

A great assistance in skinning animals is to suspend the body by a hook, so that both hands are at liberty. For small kinds a common fish-hook will answer, with the barb broken off, and a cord attached a foot or two in length. This may be inserted among the bones near the tail after the skin has been partly detached.

Other implements required are the following:—1. A sharp knife, of almost any shape, but a Surgeon's scapel without a jointed handle is the best for small kinds, and the common butcher knife, which is of similar shape, for large ones. 2. A strong, sharp-pointed scissors, and for large skins a shears is often useful. 3. Triangular Glover's needles for sewing up skins; two or three sizes. 4. A pair of spring forceps, such as are used by Surgeons, though not essential, are very useful. 5. A tape measure, three to six feet long. 6. A fine saw, or coarse flat file, to notch small bones before breaking them, so as to make them break evenly. Some use sharp-edged nippers for this purpose. Large bones may be broken roughly and the ends smoothed off.

BIRDS.

The ovaries of the female containing minute eggs, or the testicles of the male will be found near the kidneys. When a bird is shot, all large holes must be plugged with cotton or paper, and this also inserted in the mouth and throat, so as to prevent the flow of blood or other fluids. Blood on the feathers may be absorbed by sprinkling with plaster of Paris, ashes, dust or sand, shaking off all that does not stick; then make a cone of paper, large enough to put the bird in, head down, and to twist up the other end over it, taking care not to injure the tail feathers. This will secure smoothness of the feathers when the body stiffens. In cool weather it is best to postpone skinning for twelve to twenty-four hours, in order to allow the blood to coagulate, so that it will not flow so freely, and the fat hardening also gives less trouble. Some use a ring of paper pinned around the body, to obtain its exact girth, so that it can be stuffed out to the same dimensions afterwards.

Before skinning, put fresh plugs in the mouth, nostrils and large shot holes. Take the measurements and notes required. Then make an incision from the breastbone down to the tail, not so deep as to open the intestinal cavity, and carefully separate the skin on each side, plugging or sewing up any holes accidentally cut too deep. If blood or fluids run too freely, absorb them by some dry ashes, plaster or paper, and use these so as to protect the feathers; if necessary keeping the fingers well powdered. Separating the skin from one side, the leg is soon reached; this must be drawn out by the knee-joint as far as it can be, and the tendons cut where they go towards the foot. Break off the bone within the skin, and having freed that leg treat the other in the same way. It is most convenient in small birds to break these bones, and also those of the upper wing-joint, before beginning to skin, thus having the limbs less in the way.

After the legs are freed, cut down to the tail, and separate from the body, leaving some of the vertebræ attached to support the feathers. Remove the oil-glands above the tail carefully from the skin, then insert the hook in the body and hang it up, head downwards. The skin is then easily peeled off until the wings are reached, when it must be drawn to one side until the broken end of the shoulder bones are reached, which may be slipped through the muscles, and pulled out as far as possible. The muscles must then be cut off and this wing being freed, the same process is used for the other.

The skin then slips off easily as far as the head, and if large must be supported, so that its weight may not stretch the neck. In drawing it over the head be careful not to tear it, and use the fingernails more than the knife. The ear membranes are easily drawn out with it, and on reaching the eyes the attachment of the lids must be carefully separated from the eyeball, cutting so as to injure neither the lids nor the eyeball, as the fluids escaping gives trouble. Then cut off the back part of the skull, remove the brains and the eyes, clean away all remains of muscle, etc., from the skull, and sprinkle or smear the skin with arsenic. Fill the eye-sockets, and other cavities about the head with cotton or other stuffing, and draw the skin back to its original shape. If the neck has dried during the operation, it will need moistening before retraction.

The second joints of the wings now require cleaning from the muscles, etc. This may be done in small birds by carefully drawing the skin down over the bones, losening it with the finger nails. Large birds, however, need as incision under the wing, reaching the whole length of the joint, which may be sewed up afterwards by a few stiches. Arsenic must be applied freely to all these parts. The wing-bones must now be connected by a string passed through the space between the bones, or a thread sewed through the ligaments so that it cannot slip. Do not draw the wings too close together, but leave as nearly the natural distance between them as is practicable. Cotton or tow may be now wound round the broken ends of the wing and leg-bones, a roll of it inserted in the neck, and enough put in the body to fill it out to its natural shape.

When the legs are tied together no stitches are generally necessary to sew up the cut. If there are large holes in the skin they should be sewed up from the inside before putting in the stuffing. In large birds it is well to sew on wide strips of rag along the inner edges of the cut made in the skin, to protect the feathers during the operation of skinning, removing the rags afterwards. Very badly soiled skins can, however, be cleaned by the Taxidermist, and provided they have not lost any feathers, are still useful. The bill should generally be tied shut by a string passed through the nostrils, and the label may be put there or on the legs. Very long necks are best stuffed by rolling up a long cylinder of paper and passing it down the throat or from the inside. The neck may then be bent down along the side of the body, and the legs bent up so as to make as compact a specimen as possible. Having smoothed down the feathers, the bird must now be pushed carefully inside of a cylinder of stiff paper of the proper size and laid *on its back* to dry. Hanging it up by the bill or feet stretches it too much. If carefully dried it retains a good shape, and may be freely handled afterwards.

Some birds, especially ducks and woodpeckers, have the neck so slender that the head cannot be drawn through it by skinning in the usual manner. In these an incision must be made on the most injured side, from the ear down far enough to allow the head to be cleaned through it. The body may then be skinned as usual, or the incision may be continued down the neck to the bare space under the wing, and the skin taken off without cutting it elsewhere. To sew this up requires care in order to adjust the feathers nicely, and the stitches must be taken from within outwards.—Some persons skin all birds in this manner, but the feathers are more apt to fall out of those birds that have them loosely attached.

There is much difference in the ease with which a bird may be skinned, according to the relative toughness of skin, and adhesion of feathers. A humming bird is more easily skinned than a pigeon, and those of the size of a robin take much less time than an eagle. To practise on the best are blackbirds and jays, those not too fat being preferable.

Improved Flour Bolt.

In common flour bolts, or sieves for ridding flour of the bran and husks collected during grinding, much trouble is experienced from the high temperature at which the flour is delivered at the close of the process. In consequence of the heat still remaining in it, when it issues from the "cooler," it is liable to sweat and ferment, ultimately turning sour if packed in barrels in that state. The bolts are also liable to get clogged in from working, and take time to clean so as to make them fit for service again. The inventor of this bolt claims to have remedied the evils mentioned by passing currents of air through the flour in the bolt, and thus lowering its temperature and rendering it capable of being packed almost as soon as it issues from the bolt. This apparatus also saves labor in cleaning the bolt, for air blasts are directed against the cloth, freeing its meshes from any accumulations and facilitating its operation. The details are as follows;—A represents an hexagonal bolt whereon bolting cloth is stretched as usual. The cloth is also secured at the left-hand end of the bolt to the periphery of the head, B, Fig. 2, which is perforated so as to leave an annular space between its inner circumference and the shaft, C. The bolt is held in standards, D, which rise from a floor or platform, E, and are connected at top by a cross-piece, F; beneath this is placed a perforated pipe, G, the right-hand end of which passes through the right hand standard, D, and carries a crank, H, by which the pipe can be turned to cause the air blast to be presented at different angles toward the bolt beneath or turned off altogether. The left-hand end of the pipe fits in a fixed socket, I, secured on the left-hand standard. The bolt shaft is either made hollow, or fitted about its periphery with pipes for the distribution of currents of air within the bolts.

In this engraving we have shown the shaft fitted at different points of the periphery with pipes extending throughout the length and securely fastened in grooves upon the exterior. These pipes are perforated upon the side opposite the inner faces of the bolt. The right hand ends of the pipes are closed, but the left-hand ends are open, and set in and connected with a circular plate, or head, J, which is fitted to the open ends of an air chest, K. This plate is so fitted to the chest as to revolve freely within its open end, and a pipe extends from the upper side of it to the socket above, so as to form a communication with the perforated pipe before-mentioned. An india-rubber tube, M, or a suitable pipe connects the air chest, C, with a fan or blower, or an air pump, for the supply of air.

The operation is as follows:—In the bolting apparatus a stream of cold air under great or less pressure, according to the requirements of the apparatus, is passed into the air chamber, C, whence it is distributed into the perforated pipes before alluded to. Flour being supplied to the bolt, the same revolving, currents of air will issue from the pipes into the flour and reduce its temperature, at the same time tend to assist the operation of the bolt by forcing the flour through the meshes on all sides. The upper pipe will, at the same time, deliver a current of air downward upon the bolt, clearing the meshes as it rotates from bran or chaff. The current of air from the pipe may be delivered at any angle, as before stated, or it can be shut off altogether by turning the pipe so that its perforations shall be closed.

It is claimed that the quantity of flour bolted in this apparatus will be greatly increased over that done by the common machines, and be delivered therefrom in a cool state fit for packing.

This invention was patented through the Scientific American Patent Agency on March 21, 1865. State rights for sale. For further information address the inventor, James E. Madigan, Beloit, Wis.

Fig. 2

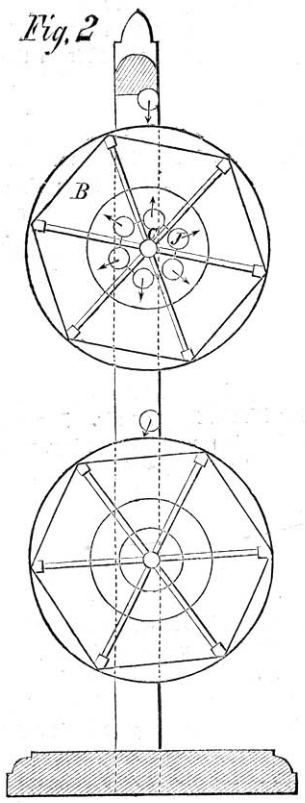
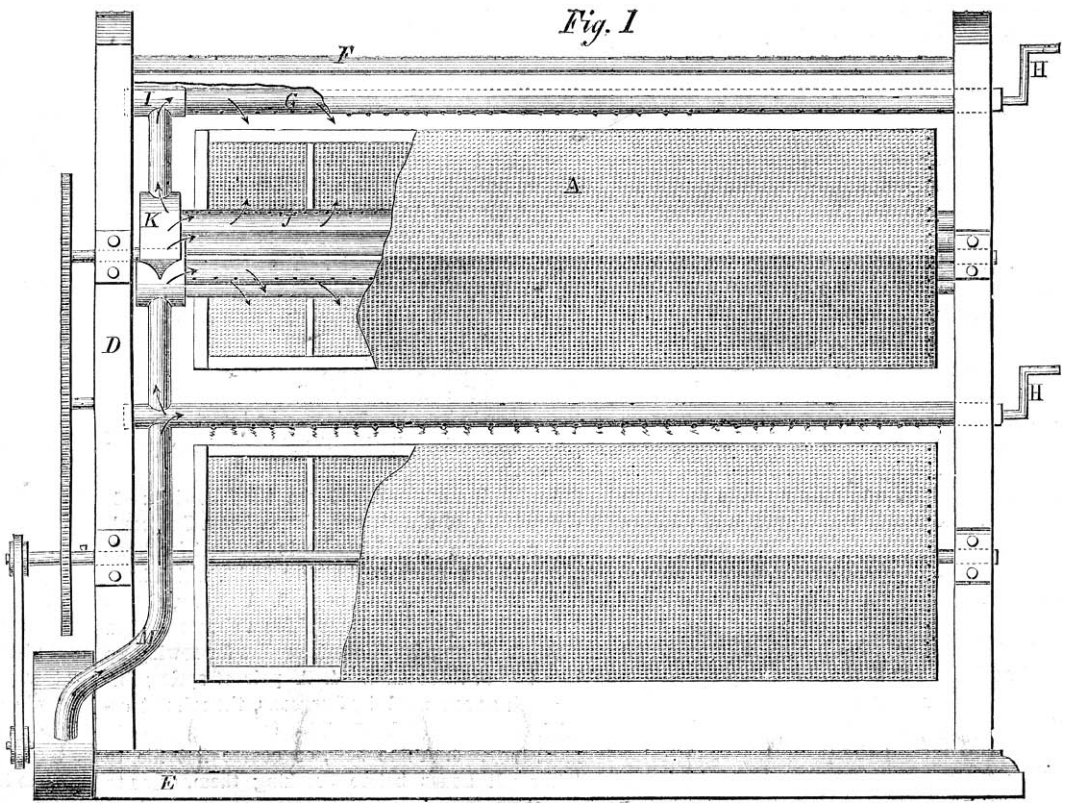


Fig. 1



MADIGAN'S FLOUR BOLT.

Absorption of Light at Different Temperatures.

The prismatic examination of light which has passed through absorbent media has been continually acquiring greater importance ever since Stokes called attention to its practical utility. In particular it is interesting to examine the alterations in absorption which take place on mixing two absorbing substances which exert no chemical action upon each other, and the alterations caused by changes of temperature.

Professor Melde of Marburg has described the modifications produced in the position of the absorption-bands of a solution of carmine by mixing it with other colored solutions, and was thus the first to call attention to phenomena of this nature. The following observations, on analogous phenomena presented by indigo, had been already made by the author at the date of Professor Melde's communication.

It is well known that indigo gives a spectrum in which a comparatively narrow red band is followed by an absorption-band, of greater or less breadth according to the concentration of the solution, while after this there comes a bright band which attains its maximum of intensity in the blue, and lastly the violet end of the spectrum again suffers absorption. Now if a small quantity of a solution of sulphate of copper is mixed with such a solution of indigo, the red line disappears immediately, and after a short time the second bright band begins to approach the red end of the spectrum, and finally extends in this direction to the extent of about one-eighth of the breadth of the entire spectrum. The indigo solution, however, must not contain any free sulphuric acid; for if only one drop of this acid is added to it the first spectrum reappears. It thus becomes a question whether the change above described does not depend on the formation of a new chemical compound. On adding dichromate of potassium to the indigo instead of sulphate of copper, a much smaller alteration takes place. The red band then remains unchanged, and after adding several drops we observe only a displacement of the limits of the green towards the red end, the maximum displacement amounting to about one-thirtieth of the total breadth of the spectrum.

The solutions examined by the author with respect to alterations of absorption caused by changes of temperature, were ferric chloride, cupric chloride, cupric sulphate, sulphate of cuprammonium, dichromate of potassium, sesquinitrate of nickel, protochloride of cobalt, and dichloride of platinum. In all these an alteration was manifest, namely in all cases an increase of absorbing power with rise of temperature; but this was much greater in the case of chlorides than with the other salts. Chloride of copper, for instance, when employed at the proper degree of concentration, becomes completely opaque at the boiling-point. And it is worthy of remark here, that the part of the spectrum which remains longest visible as the temperature is raised, does not coincide exactly with the part which is the last to disappear when the thickness of the stratum is gradually increased; so that the point of maximum intensity of the spectrum comes at a different place in the heated substance from that which it occupies at ordinary temperatures.

The behavior of chloride of cobalt is also interesting. At common temperatures and at the proper degree of concentration this substance shows two luminous bands, one of which is very intense and embraces the whole of the red and yellow, and part of the green; the other, comparatively weak, is situated in the violet. On applying heat, this violet band gradually diminishes in intensity, and two new bands of absorption, of which previously no trace was visible, appear in the red. They increase very rapidly in breadth, especially the less refrangible of the two, as the temperature rises; so that, when the boiling-point is approached, they have completely obliterated the entire bright band in which they appeared, with the exception of a very narrow weak stripe in the extreme red.

In order to explain those phenomena, one might be disposed to assume that the elevation of temperature occasioned chemical changes to take place in the liquids—that, for instance, a few atoms of water were fixed or given off—were it not that, so far as the ob-

servations have yet gone, a sudden alteration of absorbing power never occurs, but the changes take place in a perfectly gradual manner. On the other hand, these phenomena are quite analgous to those observed by Brewster and others in relation to the absorbing powers of certain gases, in which, as the temperature rises, the absorption-bands increase in number and width.—*Philosophical Magazine.*

Chemical and Mechanical Treatment of Ores.

The Philadelphia *Mining News* says:—"The new discoveries of vast deposits of gold and silver on the Pacific coast is calling out the talents of our inventors and chemists. The machinery in use at the mines, for the past one hundred years, has been of the very rudest description, and the chemical treatment has been about upon a par with the mechanical. With such treatment the mills have not yielded over fifty per cent of the gold and silver in the ores, as shown by the assays. It is a very easy matter to put in practice a process by which all the metal can be extracted in the labratory, but quite another matter to find a process that can be economically and practically worked upon the large scale now required in our newly-discovered mining districts. What would be practical in the city of Philadelphia—could the ores be delivered here—would be very expensive in a new country, two or three thousand miles away.

"Various new processes have been discovered and tried within the past five years, and we have made various improvements in machinery for working quartz, but still there is a wide field for the practical chemists as well as the machinist, and we believe the next five years will produce better practical results in working ores, than has been accomplished during the past century. The field is open for competition."

New Machine for Sowing Cotton.

Many attempts have been made to make a machine to sow cotton seed, but up to the present we believe they have all proved failures. But we now record the invention, in this city, of a machine which will do this work perfectly, easily, and faster than 100 "niggers." This machine is the invention of Mr. F. M. Bacon, of this city. The cotton seed being enveloped with the fiber, it will not, of course, roll together, and flow like other seeds. To meet this difficulty, Mr. Bacon has arranged two hoppers with spikes and followers which work the seed to the center, where it falls through to the ground, leaving it in drills as wheat by the grain drill. This machine makes the furrow, deposits the seed and covers it, while heretofore it has required a man, mule and shovel plow to make the furrows, three or four men to drop the seed by hand, and as many more to cover it with hoes. We believe there is a large fortune in this invention. Mr. Bacon has had constructed a one-third size machine, and tested it practically with cotton seed. Aside from its usefulness, the machine is worth going to see as a specimen of the work of Ripon mechanics. This work was done by Mr. Geo. Richards, and is a splendid job.—*Ripon (Wis.) Commonwealth.*

Oiling Agricultural Machines.

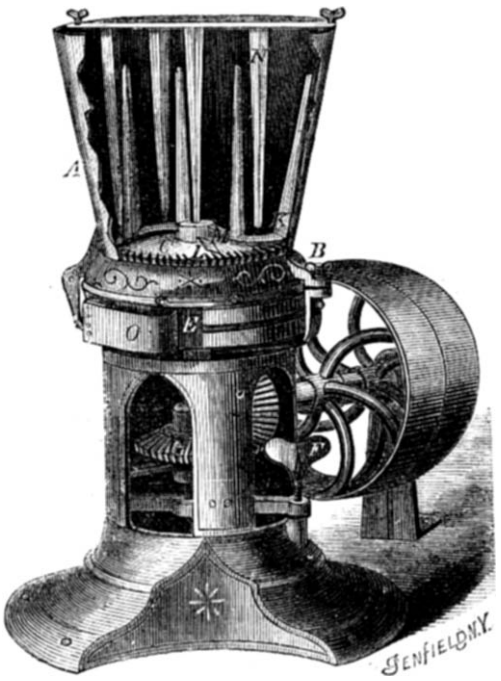
Speaking of oiling reapers, a man said the other day that he oiled his enough, for he did so *every day.* Yet this man thought his machine wore out very fast. Of course it wore out fast, and the only wonder is that he has a machine left at all from last year. A new machine needs oiling oftener than an old one, but no machine should run more than an hour without oiling the parts doing the most work. The question of what kind of oil to use is an important one. Light oils should be avoided, and those having a heavy body should be invariably used. Undoubtedly castor oil is the best by a great deal, and the only objection to its universal use for reapers is, that it is costly at the present time. But even at the present high price many experienced farmers claim it is the cheapest as well as the best. At any rate farmers should buy castor or heavy machinery oil.—*Ripon Commonwealth.*

[Castor oil is not fit for machinery. Nothing could be worse. All vegetable oils contain a large amount of gluten which makes them dry or gum rapidly, therefore animal fats are better. When nothing else can be had, pure lard will be found excellent for the bearings of machines.—EDS.

BRAINARD'S "UNION" PAINT MILL.

Paints in small quantities, and for immediate use, are commonly mixed for grinding by stirring the dry color and oil together in a dipper or other vessel, and then are emptied into the grinding mill and ground through by hand. Where larger quantities are ground for sale or use, the stirring is done by power in a machine called a "mixer," usually consisting of a plain hopper in which revolve a series of knives driven by over-head gearing and an upright shaft; into this machine the oil and color are thrown in certain definite proportions and kept in motion till thoroughly mixed; then, as with smaller quantities, the mass is transferred to the mill.

One peculiarity of the mill we are about to describe, is, that the inconvenience of a transfer is avoided, the mixing and grinding apparatus being combined so that the usual proportions of solid and liquid matter being put into the mill it is first mixed and then



ground, in one continuous operation, and the additional expense of a mixer is saved; the efficiency of the grinding part of the mill is also increased, as the color is kept in motion, and steadily fed to the grinding plates.

There is a difficulty incident to the grinding of stiff colors in ordinary mills, to obviate which there have been many inventions, but none heretofore satisfactory; it is, that the ground paint oozing out at all parts of the circumference of the grinding plates, adheres to both; that adhering to the revolving one, or runner, is removed by the scraper; but it accumulates upon the upper or stationary one, till its weight causes it to drop, or it is thrown off, and deposited about the floor; much paint is thus wasted and much attention is required to prevent the waste of a great deal more.

In the mill of our illustration not a particle of paint is wasted, or drops anywhere but just where it is wanted, and the only attention required is to keep up the supply of material in the hopper. The device for effecting this is quite simple, being merely a hollow ring of iron, forming a close chamber around the junction of the two plates, and open at the point where the scraper, O, rests against them; it is secured to the upper plate, and the lower one revolves within it. Whenever any color leaves the upper plate, it passes no further than the shallow cavity of the ring, from which it goes directly to the outer surface of the runner, and is carried at once to the scraper, and deposited in the receiver; the ring performs two other offices; its flanges fitting closely the two plates, it steadies the runner and prevents any "wobbling," it also keeps from the air the paint that may be upon the outside of the grinding plates when the mill is stopped for the night, thus keeping it from drying.

A is the hopper of the mill, hinged to the base by a pin at the back and secured by a thumb screw, B, at the front; C is the runner, driven by bevel gearing attached to the upright shaft, E, which rests in a step that is raised or lowered by set screws, F, to graduate the fineness of the color to be ground; the upright shaft, E, is splined and passes freely through the gear wheel, G, which rests upon a cross bearing, H, and is not disturbed in its relation to its fellow by the raising and lowering of the upright shaft. The runner, C, has on its top side a stud, upon which is screwed the mixing frame, K, the outer knife of which revolves close to the inner side of the hopper, preventing any adhesion of paint there; a stationary knife, L, is secured to the hopper and cleans the upper surface of the runner; the two horizontal arms, M, of the mixing frame act in relation to this knife like shears, and effectually crush any lumps that may not have been pulverized by the knives above; to facilitate the breaking up of lumpy colors, a stationary frame, or series of knives, N, is secured to the top of the hopper by the thumb screws, and as the revolving knives pass between them, the mixing operation proceeds rapidly. The mill is well arranged for convenience of cleaning.

This mill is the invention of Amos H. Brainard, of Boston, Mass., who has made the manufacture of paint mill, a speciality for many years; having other inventions to which he wishes to give more time than he can now spare, he will dispose of his paint mill business on favorable terms. [See advertisement in another part of this paper.] One of the above mills may be seen at the store of S. C. Hills, No. 12 Platt street, New York.

Correspondence

Seasoning Lumber.

MESSRS. EDITORS:—During the revolution of 1848, the Hungarians seasoned a million of green-cut gunstocks in four days, thus: they put them in a close chamber, with escape ports, steam was injected for 48 hours among the green wood. Then the stocks were plunged into tanks of iced water for six hours; after which for 36 hours in an ordinary stove-heated apartment, which sufficed to make a perfect seasoning.

This simple process—omitting the ice water—has often been used with equal success in America, chiefly on a limited scale, and often combined with giving bended forms to the wood. Recently the same plan has been tried in Mercer county, Pa., on a large scale and with complete success. The exhaust steam of the engine was used. The green boards became soft and spongy in the process, and the steam completely expelled the sap. The drying and seasoning were rapidly perfected in the same chamber. The whole process occupied four days; and it is to be observed that the boards, as well by their shrinkage as by their kindly working under the plane and saw, gave evidence of the most perfect seasoning. The Chief of Ordnance, under whom the Hungarian gunstocks were seasoned, assures us that he had frequent occasion to notice the stocks in after years; and he can speak with certainty of the perfection of the process.

There is an American patent for using steam of higher temperature in seasoning lumber, by which it is claimed that the steaming and drying are effected by one operation. Super-heated steam it is called; that is, all steam instead of steam and water, which is the cheaper article ordinarily produced in our steam boilers. Probably air, equally heated, would season as well. How far this drying the steam first, instead of drying it out of the lumber afterwards, may prove profitable, experience will tell. The heat expended in each case is probably the same. What we understand is, that there is as yet no exact mechanical means of application, regulated as to secure the precise temperature that will season the lumber and not char it. The process, like all experience with superheated steam, is one of great delicacy. Yet it may be found practicable to bring it, for this purpose, within the enforcement of exact, yet easy, mechanical and chemical application. Till that time lumbermen have, in the Hungarian process, a certainty of being able to season their green boards without risk and at mere nominal expenditure. ANTHRAX.

Manufacture of Vache Lissie.

MESSRS. EDITORS:—Conformably with your desire I send you the details of the manufacture in France, of the neats leather called *vache lissie.* The skins

with the hair on are always soaked in running water, in water that is neither too hard nor too soft, for if the water be too soft the leather will not have sufficient firmness. After eight days the skins are taken from the water, cleared of the particles of flesh adhering to them, thoroughly rinsed, and piled to drain, after which they are treated with lime. They are first thrown into milk of lime which has already been used, and allowed to remain four or five days, being handled from day to day. They are then put into a new and very strong milk of lime, and kept for ten or twelve days, or long enough to loosen the hair. Each workman now takes his five skins, the number for a day's work, scrapes off the flesh, works them once on the hair side with a stone in the form of a knife, and puts them the same day into the liquor. The tubs which contain the liquor are of oak, round, 4½ feet high and 5 feet in diameter. The skins are put into these tubs in liquor which has already been used, and left for two days, being handled three times each day. They are then taken out, the liquor is cleaned of the old bark and four bushels of new bark is added, with a little water to maintain always the same quantity of liquor. At the end of eight days the bark is changed again, and 6 bushels of new bark is added. At the end of a week the hides are put into the vats, which are 6 feet wide and from 6 to 8 feet deep, with a good bed of bark on the hair side. At the end of four months the bark is changed and this time it is put on the flesh side. At the end of four months thin hides are taken from the tanks, or in less time if found to be thoroughly tanned; but thick hides are returned to the tank with a fresh bed of bark applied to the hair side. After the hides are tanned they are placed lengthwise on a block of wood and split from head to tail. Each half is numbered at the tail, and then two workmen hold it, one by the head and the other by the tail, and with a stick knock off the bark adhering to it. The leather is now mounted to dry, but it is never dried in the sun, as that would turn it red. After moistening, the leather is ready for currying.

Voila, Messieurs, comment que ce cuir est tanne en France. Votre Serviteur. M. A. DURIFT.

[Tanners will observe that our correspondent passes over the process of removing the lime; probably that is the same as usual.—EDS.

New Electro Motor.

MESSRS. EDITORS:—Some time ago, when electromagnetism was discussed as a motor the velocity of sound was stated to be 1142 feet per second, light 192,000, electricity 576,000. I would like to know if the above is admitted to be correct; if not what is the fact?

Since Mr. Charles J. Page made his experiments I have been trying to make this great velocity available in producing motion. I think I can now produce ten or twelve times the power that Mr. Page did with the same battery. The counter current is no detriment in this arrangement, and an engine can be worked at fifty revolutions per minute or two hundred, with equal effect. BALSLEY.

Dayton, Ohio, July 17, 1865.

[The velocity of sound in air at a temperature of 61° F. is 1118·3 feet per second, and it decreases with the temperature, being 1106·091 feet at 50°. The velocity of light is 192,000 per second, and that of electricity is very various, depending on circumstances. By Wheatstone's measurements the velocity of frictional electricity was found to be 288,000 miles per second, that of the voltaic current, when the earth forms part of the circuit, is stated by the engineers of our coast survey at 16,000 miles per second, though it varies considerably with the conditions.

The objection to electricity as a motive force is its cost. In the battery the power obtained by oxidizing zinc which is worth 13 cents per pound, while in the steam engine it is obtained by oxidizing coal which is worth one-third of a cent per pound. EDS.

The Value of Experience.

MESSRS. EDITORS:—At the time I engaged you to prosecute my claim for letters patent a gentleman in this place undertook three cases on his own responsibility, and ridiculed the idea of employing scheming yankee agents, especially without first contracting terms, as in my case, since I was sure to both fail in getting a patent and be swindled in the bargain; the only safe course being to do one's own business, etc. However, as the case progressed this same individual expressed surprise at the promptness of my agents in doing their duty, and now that the patent is granted on my improvement, I not swindled nor in any way wronged, and his cases having troubled him from the beginning and are now finally rejected, you can console yourselves by being assured that experienced agents are in better demand with him just now. And I write to thank you for the discharge of your duty in my case. I, too, am more than satisfied, and if I had forty—I have two that I want to have you prosecute as soon as convenient—cases you should have the whole of them. I repeat, I am more than satisfied, and thank you for your services. F. BREWER.

Collinsville, Ill., July 14, 1865.

Pneumatic Railways.

MESSRS. EDITORS:—Some ten years ago, while living in New York, I endeavored to call the attention of the public to this mode of traveling, and for several years I was quite enthusiastic and sanguine that it would supersede the present mode of railroading, but, after a while I saw, or thought I saw, reasons why it could not be generally and extensively adopted. One reason was, that it would have to be one continuous building from one end of the route to the other, and, of course, could only be crossed over or under. Another reason why I was not sure it would work, is, or was, the elasticity of the atmosphere.

Please give us your opinion upon this point. Would the power be as great or effectual if the car was twenty miles from the engine, as if it was but twenty rods?

I suppose a tube six or eight feet square, made true and smooth, of good inch lumber, inclosed in a light frame, would stand sufficient pressure inside to send a car weighing a thousand pounds (and perhaps more) at the rate of one hundred miles, or more, per hour, and I see no reason why this car could not rest and slide upon oiled ways with but little noise or friction. Really, if these things can be done, we shall soon attain the speed of a bullet, and in a similar manner, too. But let us have this subject fully illuminated in your paper, for there may yet be something in it. HAMILTON ILLINOIS.

Tempering Mill Picks.

MESSRS. EDITORS:—For the information of "N. D.," of Mich., and others, I will give the result of 35 years experience in making mill picks and other similar tools. A great deal depends upon the manufacture of the steel for such tools. For instance: to sharpen a mill pick, heat it evenly to a bright red, no matter how quick, so that it is evenly heated; then do all the hammering on the edge first, so as not to strike it on the edge after it is brought down thin, or the corners will be liable to crack off in hardening. Then, with light blows, reduce it to a proper thickness, hammering on both sides alike, dipping the hammer frequently in water. Do not strike it hard when too cold; file the pick to an edge; then heat evenly, as before, though not quite so hot, and plunge into water, not too cold, for a distance of three-fourths of an inch. Continue to sink the tool gradually for an inch more, or it will be liable to jump off at a line between the hard and soft steel, then let the temper run down until the color begins to change; just enough to toughen but not materially soften the steel; after this cool it off.

If this process answers N. D. as well as it does me I shall be amply rewarded.

I use may old files from the saw-mill for picks, which I find very economical. A. T. P.

Albia, Iowa, July 15, 1865.

Taste in Designing Machinery.

MESSRS. EDITORS:—Almost every product of human hands may be said to consist of two parts, viz., the real and the ornamental or ideal. A machine may perform its work well, quietly and rapidly and yet be uncomely and ill-proportioned; in other words, a machine may be in its real and essential quality all that could be desired, and yet be unskillfully designed. The outline of its frame work may consist of straight lines, sharp corners, and abrupt terminations, where there should be a symmetrically curved outline, with weight and strength, varying according to the demands of the work to be done by the machine. Its working part may be too heavy here and too light there for the office for which they were designed.

Not many years ago I saw a steam engine on exhibition in a New York fair, which was entirely covered with carvings, gilding, beadings of every kind; it was made down South—in Montgomery, Ala., I think—and "What a beautiful thing!" was the exclamation of many a passer, but I wondered at the taste, or, rather the want of taste in the designer of such a pile of superfluities.

Some of the forms of architecture to which we still cling with tenacity are deserving of much criticism and modification. But let me say to Young America, be simple, truthful, persistent, bold and original in all your elaborations, then will the work of your head and hands be in keeping with your professions, and in harmony with the progressive democratic republican idea, and worthy your race and time.

F. G. W.

Worcester, Mass.

Another Cause for Defective Cartridges.

MESSRS. EDITORS:—I notice some letters in your paper of the 8th inst., in regard to the metallic copper cartridge. I will set forth my experience in this matter. I have had one of Ballard's breech-loading rifles for the past two years, and when the mercury stands at 12° to 30° below zero, the tallow on the outside of the cartridge scrapes off when the cartridge is inserted in the gun and rolls up in a ball behind the flange on the back end of the cartridges, forming a cushion between the flange that contains the percussion, and the end of the barrel, so that the blow from the hammer is insufficient to strike off the fulminate through the tallow. I have had five out of six miss fire through this cause, but by warming the cartridge and wiping off all the tallow not one out of a hundred will miss fire. J. H. TIBBITS.

Shokopee, Minn., July 13, 1865.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Ratchet Lever Press.—This invention relates to a press in which the follower is actuated by two sets of lever pawls and eccentrics, in combination with ratchet wheels and chains (or, instead of the chains, racks and pinions, or worms or worm wheels might be substituted), in such a manner that by the continuous revolution of the driving shaft an intermittent rectilinear motion is imparted to the follower, and the most powerful pressure can be effected. The driving eccentrics are placed at right angles to each other, so that if one of the pawls draws back to take a new tooth the other pushes, and the motion of the follower is made as steady and continuous as possible. Said eccentrics are, however, arranged in such a position that the lower pawls on one end of the press take hold at different times from those on the opposite end, and the follower travels up alternately, first on one end, then on the other, whereby the operation of the press is greatly facilitated, and a much more powerful pressure on the material in the press can be effected than in ordinary presses, where both ends of the follower move simultaneously. The chain wheels are so constructed and arranged in relation to the ratchet wheels and to a hand wheel on each end of the press, that by turning the hand wheels in one direction the chain wheels are tightened and rendered rigid with the ratchet wheels; and, furthermore, the follower can be moved up by hand until the material in the press is compressed to such a state that no more than hand power is requisite to complete the pressing, and when the pressing operation is complete, and the bale tied, the follower can be released by simply turning the handwheels, whereby the chain wheels are rendered loose and allowed to turn back, independent of the other mechanism. The follower is then made to descend instantaneously by its own gravity, and no time is lost in working the press back. Thos. B. Webster, New York City, is the inventor, and has assigned it to himself and Thomas Gannon, of No. 25 Old Slip, N. Y.

Valve.—This invention consists in a flat disk valve,

with two or more passages communicating through the interior of the valve, in combination with a flat seat, furnished with two or more ports, which communicate with the receiving and discharge pipes, and with a center pin passing through a central shell in the valve and seat, and held in place by a spring and nut, in such a manner that when the valve is turned and the ports in the same made to communicate partially or wholly with the ports in the valve seat, a free and unobstructed communication is effected between the pipes, which communicates with the several ports in the seat, and a valve is obtained which is not liable to leak, and to the working parts of which free access can be had with little loss of time. D. D. Allen of South Adams, Mass., is the inventor.

Sewing Machine.—This invention relates to certain improvements in that class of sewing machines which produce what is termed the lock stitch. The loop of the needle thread is caught by the beak of an oscillating bobbin holder, which rests loosely between the jaws of an oscillating shoe, being retained in its position by a hemispherical spring bearing, which drops into a socket in the center of the bobbin, and which is so arranged that the loop of the needle thread will slip through between the same and its socket. After the loop of the needle thread has passed over the bobbin, carrying the lower thread, and the needle has ascended, said loop is turned up and held under the table by a slide actuated by a vibrating arm, in such a manner that the needle, on its subsequent descent will not pass through it, and each stitch is drawn tight by the subsequent action of the beak of the bobbin holder on the next succeeding loop of the needle thread. The feeder is secured to a bar, which has a reciprocating and a rising and falling motion, being subjected to the action of a cam and to that of a spring, the former to raise it up against the action of the presser foot and force it out against the spring, and the latter to cause the feeder to recede, and while retracting it (the feeder) is depressed by the action of the presser foot, so that its teeth will be clear of the material to be sewed. Patented in the United States and in Europe through the Scientific American Patent Agency, by Jacob Zuckermann, of No. 206 William street, New York City.

Double Screw Press.—This invention relates to an improvement in that class of presses in which the power is exerted by a right and left hand screw acting by means of toggle arms on the follower or followers. The box in this improved press is placed in a horizontal position, the right and left hand screw passing through its center in a vertical direction. On each side of the screw is a follower, and two nuts travel up and down on the screw whenever a rotary motion is imparted to the same. Said nuts connect by toggle arms with the follower, and if by turning the screw in the proper direction the nuts are made to close up, the toggle arms exert a progressive power on the follower, and the pressure on both sides of the screw is perfectly balanced, and all the power exerted by the screw and toggle arms is utilized. The bearing of the screw spindle and those of the driving shafts are movable or yielding, so that they are allowed to adjust themselves according to the quantity of material in each press box, and that the screw spindle is not subjected to an unequal strain, which would have a tendency to bend it. The nuts are composed each of two jaws, which are made to open and close by means of eccentrics or crank shafts passing through them, and geared together in such a manner that by turning a hand wheel both jaws open or close simultaneously, and the nut can be made to release or grasp the nut instantaneously. By this arrangement much time is saved in operating the press, since in working the followers back the nuts can be released, and thereby said followers are brought in such a condition that they can be pushed back with little loss of time. Thomas B. Webster, of New York City, is the inventor, and has assignsd it to himself and Thomas Gannou, of No. 25 Old Slip, N. Y.

Artificial Leg.—This invention consists in a double butt hinge fastened to two pieces of wood, one of which is inserted in the leg above and the other below the knee joint, and which are shaped in such a manner that the requisite motion is left to the leg backward and forward, and that at both extremities of its motion the hinge and the pieces of wood are brought flat against each other, and a positive stop is obtained. The invention consists further in an ankle joint, composed of two plates secured to the lower end of the leg, and two brackets fastened in the heel part of the foot, in combination with a pin passing transversely through the plates and brackets in such a manner that a firm, durable and simple joint is obtained, which leaves the foot at liberty to swing up and down as far as may be desirable. The invention consists finally in a tendon, one part of which extends up from the heel to a loop suspended from the bight of a belt, one end of which is secured to an eye-bolt secured to the lower part of the knee joint, and in front of the same, whereas its opposite end extends up over a rod or roller in the upper part of the knee joint, to which it is secured near the hough in such a manner that when the knee joint is straightened out the tendon will have a tendency to prevent the same from bending, and a spontaneous breaking down or involuntary bending of the joint is avoided. Joshua Monroe, of No. 560 Houston street, New York City, is the inventor.

Bracing the Running Gear of Railroad Cars.—The pedestals of railroad cars, in which the bearing of the axles are fitted, have a tendency to be forced out of a perpendicular or vertical position in consequence of the side surging, lurching and concussions to which they are subjected when the cars pass over curves and turnouts. This is more especially the case when axles are used having no collar or shoulder on the outward end of the journal. The forces above referred to, and also the powerful brakes pressing against the wheels at their outer or farther sides have a tendency to disarrange the parallelism of the two axles or their rectangular alignment, in either of which cases the car runs hard and is prone to leave the track. This invention is designed to obviate these difficulties, and it consists in an arrangement of longitudinal stays or connecting rods and diagonal stays applied to the pedestals in such a manner as to effect the desired end. John Stephenson, New York City, is the inventor.

Axle Box.—The object of this invention is to obtain an axle box for car axles which will afford them greater facilities for repairs than usual, and which will promote the durability of the box and of the parts connected therewith. The bearings and journals of railroad carriages are moved more rapidly toward the shoulder in consequence of the presence of some foreign substances entering at the aperture through which the journal passes into the box. Many contrivances have been devised to prevent such entrance, most of which are complicated, requiring attention and adjustment, and resulting in but partial success. This invention, it is believed, is superior, on account of being simple, self-regulating and more efficient. John Stephenson, New York City, is the inventor.

Valve for Gage Cocks, Etc.—The object of this invention is to construct a valve for gage cocks that shall fit closely to its seat, operate easily, and lose none of its qualities by long continued use; and it consists in making the valve in a conical form, and fitting it in a correspondently bevelled seat, and in forming in its base a tunnel-shaped cavity, into and against which the steam or water presses, in such a manner that the steam or water itself causes the valve to fit so closely to its seat that there is no possibility of any escape of either the steam or water, except when the valve is turned for that purpose. E. A. Walker, of Nashville, Tenn., is the inventor.

Machine for Cleaning and Finishing Silk Thread and Other Articles.—The object of this invention is to finish silk thread after it has been spun, and other articles made of silk, such as twist, braid and cord, and also thread cord and other articles made of cotton, linen, worsted or other fibrous materials. It supersedes the process of cleaning such articles by means of knives or sharp-edged bodies, and by means of passing them over a flame, as commonly practised. This invention consists, among other things, of a new process of cleaning such articles by means of frictional contact with metallic or other suitable surfaces. By the method now commonly used silk is cleaned in the raw state and by single threads, and whenever an uneven thread or a knot comes along the cleaner knives will cut the thread in two, and the two ends must then be united again, and since in making sewing silk or twist as many as twelve or fifteen of these threads are twisted together, it follows that the silk or twist is full of knots and very uneven. But by this new process the silk is wound, doubled and twisted into silk thread or twist while in a raw state, and then dyed and afterward put through the machine described in this patent, which stretches, cleans and finishes it, taking out the kinks and softening it, and also greatly brightening its color. A machine with eight cleaning spindles will do the work of about fifty operatives, and also effect a great saving in silk. Tobias Kohn, Hartford, Conn., is the inventor.

Register.—This invention relates to a new and improved register for denoting the number of revolutions made in a given time by any shafting of machinery. The invention is more especially designed to be applied to marine engines, in order to show the number of revolutions of the paddle wheels or propeller, but it may be advantageously applied to all machines where a knowledge of the speed of certain driven points is desirable. The object of the invention is to obtain a register which will be compact and operated by a positive mechanism, so that it will perform its work with accuracy, and have its index wheels so arranged that they will be capable of being set to the new mark at the commencement of each operation of a machine. Victor Giroud, New York City, is the inventor.

Drill and Apparatus for Boring Wells.—This invention has for its object the boring of oil and other deep wells, and it embraces several improvements in apparatus for effecting the work. The drill has several cutters, two of them with narrow faces set on opposite sides of the main cutter, and all the cutters are placed at an angle with the axis of the stock, so that they give a forward or angular stroke. The drill stock is provided with vanes, also set angularly for the purpose of giving a partial rotation to the drill by means of the resistance of the fluid and debris of the rock through which the drill descends. The edges of these vanes are armed with surfaces of glass or other suitable material which will resist abrasion and protect the sides of the cutters, so that the drill shall not be worn to a smaller diameter. The head of the drill stock works in a swivel, and is free to rotate and also to move vertically therein, so that the drill receives a downward blow from the swivel after the cutters have reached the bottom of the bore, and also an upward blow when it is being raised for the next stroke. The drill rope is fed out automatically by means of a spiral groove formed in a stationary pin, around which the rope is wound in connection with a friction roller which is placed above the said pin, and the stroke of the drill is effected by means of a drop motion. Caleb Bates, of Kingston, Plymouth County, Mass., is the inventor.

Method of Separating the Products, by Distillation, of Hydro-carbon Oils and Other Substances.—The object of this invention is two-fold—first, to separate the benzole and heavy oils from the illuminating oils while manufacturing the same from petroleum, coal and other substances; and second, to return the heavy oils which are condensed in the first sections or parts of the condenser to the still for redistillation. The first part thereof can be applied with advantage to the distillation of all volatile liquids, as, for instance, to whisky or alcohol, since the water distilled over will be condensed before the spirits, and may be separated by this process with great facility. L. N. Wilcox, Pittsburgh, Pa., is the inventor.

Gas-lighting Device.—This invention relates to a new and useful device for lighting gas, and is more especially designed to be used for lighting street and other out-door lamps, so as to dispense with the use of friction matches, a great number of which are consumed for this purpose on account of failures to ignite, owing to the wind, storms, dampness of the atmosphere, unnecessary waste, etc. The invention consists in inserting an oil or other lamp within a suitable case provided with an opening at such a point and in such relation with the wick tube of the lamp that the device may be applied to the gas burner, and the flame from the lamp ignite the gas issuing therefrom. John G. Harper, New York City, is the inventor.

BEET CULTURE IN FRANCE.—It is said that the beet culture in France now furnishes more than a *hundred million* pounds of sugar, for human consumption.

Improved Isochronal Chronometer.

This article is furnished by the inventor.

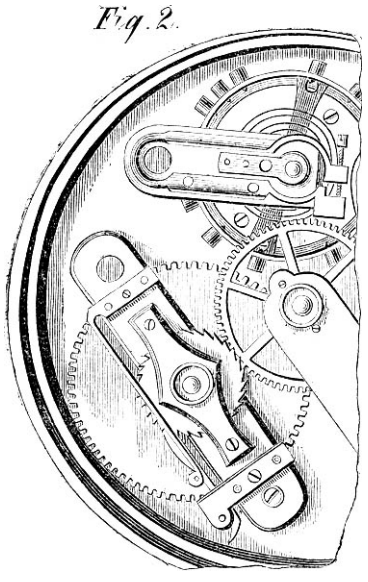
"The manufacturer of the Isochronal Pocket Chronometer, after an experience of over thirty years in practical watchmaking, believes he has constructed a watch which, in excellence of time-keeping and durability, far excels any now in market. The combinations introduced in his chronometer are such as to insure perfect time in all climates and occupations. The inventor, through strict adherence to the most approved mechanical principles, has been enabled to avoid all those errors and defects to which other chronometers are more or less liable.

"The inventor of the American pocket chronometer has, during his long experience (more than thirty years), had ample occasion to observe the defects of different escapements; and his aim has been to construct one which should, as far as possible, be free from all the defects heretofore encountered.

"The isochronal escapement works by means of two wheels, and gives the impulse, not by a stroke, as in the detent spring, but equal driving; thereby reducing the friction to the lowest possible point.

"The following is a description of the superiority of my escapement:—Fig. 1 is a top view of the 'movement;' Fig. 2 has a portion removed, and Figs. 3, 4, and 5 show the improvement which constitutes the invention. It is through its construction held by every movement of the balance to unlock, and to

Fig. 2.



add thereto the requisite or necessary impulse. Each impulse imparted will show correctly on the dial and cannot—as in the case with the detent spring-chronometer escapement—escape double or not at all. The counter or outside motion, will have no influence on the time. The escapement cannot get out of order when being cleaned, because it is so constructed that it operates through mechanical action and has no need of springs, like the detent spring escapement. The action of the detents is like the anchor, and the escape is like the detent spring escapement. It has all the advantages of both of these, and is entirely free from the defects that they are liable to."

This invention is protected by three patents, dated Feb. 1, 1859; April 5, 1864, and March 7, 1865, all issued through the Scientific American Patent Agency. For further information address the inventor, Charles Fasoldt, 128 State street, Albany, New York.

Fig. 1.

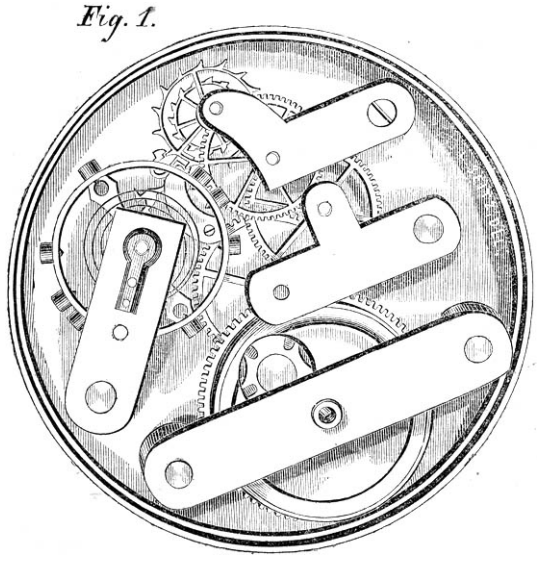


Fig. 3.

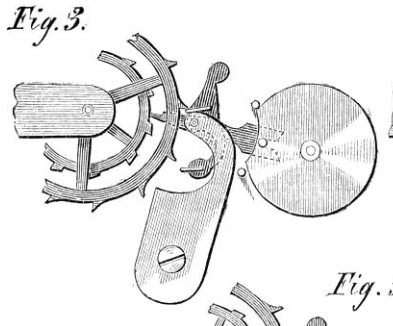


Fig. 4.

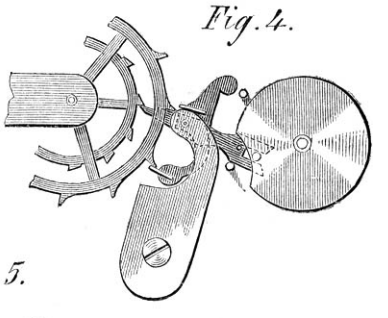
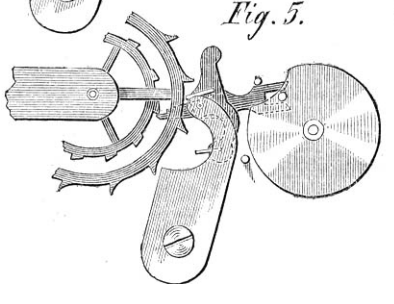


Fig. 5.



FASOLDT'S ISOCHRONAL POCKET CHRONOMETER.

A New Light.

This journal recently called attention to the strong resemblance of the crystals of sulphate of magnesia and sulphate of zinc, they being so much alike that the eye cannot with certainty distinguish the difference. Unfortunately a proof of this was given in the city about the same time, for a chemist's assistant served a woman with sulphate of zinc for Epsom salts, in consequence of which she was made very ill, but is now slowly recovering. *L'Opinione*, of Turin, announced that Professor Carlevaris de Mondovi had discovered a means of producing light of more actinic power than that given by metallic magnesium, and that the editor of that journal had seen portraits taken by its aid. The inventor—who at first kept his process a secret, although he had made some successful experiments with the new light at the Scientific Institution at Genoa— came last week to Paris, and made his process known at the Academy of Sciences. He said that when magnesium wire was ignited in atmospheric air, or in pure oxygen, the most luminous effects were not manifested till a certain quantity of oxide had been formed, and was raised by the heat produced to an excessively high temperature. The light in this case, as in the combustion of carburetted hydrogen, as in that of hydrogen in contact with platinum, and as in the Drummond arrangement, is derived from the solid particles raised by the flame to a great heat—a heat which dissolves and volatilises platinam, but leaves the oxide of magnesium solid, fixed, and intact. To raise this oxide to the temperature necessary to give the greatest light, it should be presented to the flame in as small a quantity and in as large a volume as possible, which is done by employing a spongy oxide, obtained in the following manner:—A piece of chloride of magnesium is exposed to the flame of the oxyhydrogen blowpipe, in contact with a piece of carbon. The chloride of magnesium is rapidly decomposed, leaving the spongy oxide, which gives the light in question; or by simply replacing the chloride with the carbonate of magnesia of commerce, the same effect can be produced.

COFFINS for preserving the bodies of the dead for an indefinite length of time, by means of ice, are now sold in New York City. The bodies are preserved in a dry and frozen condition so that little change takes place. Persons who desire to be preserved after death should so specify in their wills and bequeath funds to keep up the supply of ice as long as they wish the preservation to be maintained.

FROM the single county of Bergen, N. J., there were sent to the New York market 4,500,000 baskets of strawberries last season.

MISCELLANEOUS SUMMARY.

GREAT PRIZE IN VOLTAIC ELECTRICITY.—The French Government has just announced the renewal of the grand prize of 50,000 francs to be given, in five years time, to the author of a discovery which shall render the voltaic pile economically applicable as a source of heat, as a means of lighting, or otherwise, in chemistry, mechanics, or medicine. This prize was awarded, in September last, to M. Ruhmkorff, for the well-known apparatus which bears his name. In case no invention deemed worthy of the honor should be brought forward within the time specified, the period may be prolonged for another five years by decree. The prize is, we believe, open to all the world, but it is not so stated.

PRESERVING GRAPES.—Mr. F. J. BOVING, of Lancaster, Ohio, has been very successful in preserving grapes during the winter, in the following manner:—On a clear bright day he gathers perfectly ripe and sound bunches, and lays them carefully in stone jars holding one or two gallons each. The jars are then set in the ground, in a trench deep enough to allow their tops to be eight or ten inches beneath the surface. Some boards are then laid over the jars, the trench filled up over it. Grapes packed in this way keep perfectly well until the first of March.

THE Beloit (Wisconsin) *Journal* mentions one firm in that town who have, during the present season, built 700 agricultural machines, comprising reapers, mowers and two wheel cultivators. The number of cultivators manufactured by them is 450. The firm has been very successful in selling, the articles manufactured being already disposed of.

STEAM AGAINST MUSCLE.—In a race between a steam wagon and a pedestrian at Poughkeepsie on Friday last, the wagon went a mile in 2,20, beating the man, who was to go a half mile. The man made his mile in 5,20. The wagon also beat a trotting horse, who went his mile in 2,37½.

THE *Dictator*, ocean monitor, arrived at Boston on the 23d inst., on her way to Halifax, and ultimately to Europe. On the trip to Boston she made nine to eleven knots an hour with ease and it is hoped to increase the speed to thirteen knots.

THE *Quinnebaug*, government transport recently destroyed, was an old vessel and one of the first in which twin screw propellers were used. She formerly ran to Norwich.

MESSRS. CROSSE AND BLACKWELL have lately had a large boiler made of aluminum, in which their jams and preserves are boiled. By this means all injury from any contact with copper is avoided, and the aluminum is not attacked by the operation.

A SOLUTION of a pound of copperas in one gallon of hot water, diluted with five or six gallons of cold water, and applied with a watering-pot, has been found fatal to the currant worm.

"JACKSON'S Hominy Mill," illustrated on page 31, of the present volume is very highly spoken of; the inventor's address is Andrew P. Jackson, Memphis, Clark Co., Indiana.

THE

Scientific American.

MUNN & COMPANY, Editors & Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

☞ Messrs. Sampson Low, Son & Co., Booksellers, 47 Ludgate Hill, London, England, are the Agents to receive European subscriptions for advertisements for the SCIENTIFIC AMERICAN. Orders sent to them will be promptly attended to.

☞ "The American News Company," Agents, 121 Nassau street, New York.

VOL. XIII. NO. 6...[NEW SERIES.]....*Twentieth Year.*

NEW YORK, SATURDAY, AUGUST 5, 1865.

Contents:

(Illustrations are indicated by an asterisk.)

*Black's Gang Plow	79	Taste in Designing Machinery	84
Report of the Committee on Heavy Ordnance	79	Another Cause for Defective Cartridges	84
Laying the Atlantic Cable	80	Recent American Patents	84
How to Skin and Stuff Birds	81	*Fasoldt's Isochronal Pocket Chronometer	86
*Madigan's Flour Bolt	82	A New Light	86
Absorption of Light at Different Temperatures	82	Miscellaneous Summary	86
Chemical and Mechanical Treatment of Ores	83	The Want of the Day	87
New Machine for Sowing Cotton	83	The Challenge to the Navy	87
Oiling Agricultural Machines	83	Tool Borrowers	87
*Brainard's "Union" Paint Mills	83	The Great Schools of England	87
Seasoning Lumber	83	The Fair of the American Institute	87
Manufacture of Vache Lissie	83	Patent Claims	88, 89, 90 91, 92
New Electro Motor	84	*Buerk's Watchman's Time-detector	94
The Value of Experience	84	Railroad Racing	94
Pneumatic Railways	84	A Disease Among the Silk Worms	94
Tempering Mill Picks	84		

THE WANT OF THE DAY.

Since the war has ended the attention of many persons has been drawn to the cultivation of cotton with the laudable design of once more stocking the market and starting factories, so that the needs of the people shall be supplied.

Of course the old time methods of growing this staple are unsuited to the spirit which now directs operations. Listless and slovenly culture is to give way before an energetic, methodical and business-like mode, so that two bolls shall grow where but one did formerly. Machinery in general is wanted, but for one special machine, above all others, there is great need. That is one for picking cotton. At present the yield of cotton per acre is limited by the quantity which can be picked during the season. Planters inform us that one of the greatest obstacles to renewing the cotton supply is the difficulty experienced in harvesting what the land is capable of producing. They further assure us that if a machine could be invented for picking cotton, not only would great good to the community result, but the fortune of the lucky inventor be secured beyond doubt.

Let it not be supposed that we broach this subject with serene self-confidence, as if we had only to will that such a machine should be made, or that the production of it is a simple problem easily solved by a tyro. This is not the case. The task is arduous. There are difficulties in the way but the invention would be a great one and take rank beside that other machine, the gin, which has a world wide celebrity. Let us look at some of the difficulties. Cotton does not all ripen at once. It grows to various hights in the same row. It does not always grow to the same hight in the same State, or county, or field, even. It is cultivated in rows five or six feet apart, and the plants are from 30 inches to 60 inches tall.

Now a machine has to be made which will go between the rows, *look* at the opened bolls, take them and reject the others. And this has to be done with such unfailing accuracy that it will be a success, like the mower or reaper. Nice mechanism is, of course, out of place; a costly machine would be a dead failure. It is necessary to have the cotton picker so simple, so reasonable in price and so useful that any person with two hands can use it, or any one that is able to raise five bales of cotton, own one.

Parties who are now engaged in raising cotton are agreed on these points, and think that the machine should pick at least four times as much as a full hand can. By working between sun and sun the latter can gather 400 pounds. We firmly believe that this machine can be produced. If not to-day, in the future, but the sooner the better. The incentives to exertion are great, the obstacles are also great, and no man should put his hand to this plow if he thinks of looking back.

All the information we can obtain on this subject we shall immediately lay before our readers and we suggest that planters and others interested in such machines should endeavor to aid inventors by forwarding communications containing practical hints relating to it.

THE CHALLENGE TO THE NAVY.

The monotony of midsummer has been broken recently by a revival of the discussion which Mr. E. N. Dickerson and the Navy Department have been carrying on for some years past, greatly to the delight of the friends of both parties, also to the delectations of persons who are fond of comic literature.

The machinery of the *Algonquin*, a double ended naval vessel which was constructed by Dickerson was not accepted by the Government for causes not made public, and Mr. Dickerson thereupon issued a challenge to the Navy Department to try the speed of the *Algonquin* and the economy of her machinery by a race. The conditions of this trial were that each steamer was to have an equal amount of coal weighed into her and run until the same was exhausted; after this the steamer giving out was to be towed back by the other to the starting point. This challenge was not accepted under these conditions, but the Navy Department offer to try the engines of their design at the dock against those of Mr. Dickerson, by testing the amount of power given out for fuel burned, leaving the decision to engineers of note in this city. Mr. Dickerson's reply to this challenge had not been promulgated at the time of our going to press but we presume he will decline it. We hope the test trial will come off, and that neither Mr. Dickerson nor the Navy Department will object to the trial as suggested by the other. Why not test the matter under both conditions?

TOOL BORROWERS.

A tool borrower is a tool breaker. He that knows how to use tools keeps them in order and always has them ready for use. There is nothing more trying to the good workman, when he has just sharpened his tools and put them in their appropriate places, than to have some shiftless comrade catch one of them up, turn the edge, break it, knock the handle off, then put it back slyly in the drawer, or, what is more likely, throw it down where he got through with it.

If it be in a machine shop, there is sure to be some good-for-nothing, who goes prying about his companions' lathes for a sharp side tool with a long point. This he pounces on, runs it under the center and breaks the end off, after which exploit he borrows another of some one else to be served the same way.

All the center drills that can be found in the tool-borrower's possession are broken short off. His center punches are blunt, his files without handles, and the tangs bent. His hammer is loose on the handle, his chisels are a quarter of an inch thick on the end. There is a filthy mess of greasy waste, old washers of different sizes, a lot of old bolts and a piece of yellow soap daubing everything in his drawer. Red-lead litters up one corner, and a reversed oil can, dripping its contents over everything, aptly represents the character of the man and his ideas—all upside down.

It is the same with neighbors in the country or the city. "Lend me your ax?" says one. "Oh, yes," you reply cheerfully, but it is ten chances to one if you ever get it again, or if you do the edge is destroyed, and the helve is half out. If the hammer is loaned it never comes back. The saw wants setting when you go to get it from the man you lent it to, and you find to your sorrow that it was not hard enough to cut nails, as the rounded teeth testify. The worm on the auger is a worm no more, and the lips of the edge will cut nothing. The screw-driver is bent, and the gimblet broken short off, and ruin is over and upon all.

There are some occasions where tool borrowing is pardonable and justifiable, that is when they are returned in as good condition as they were taken away. To those who continually abuse tools they should never be lent, for no man is obliged to suffer loss for the convenience of others. Tools are indispensable to every one not rich enough to hire a workman for ever will that has to be driven, and the time, trouble and annoyance saved by having the tools always at hand and ready for use cannot be lightly estimated.

THE GREAT SCHOOLS OF ENGLAND.

In the year 1861, a Commission was authorised by the British Parliament to make a thorough examination of such of the principal schools of England as are supported mainly by bequests or endowments of property, and the report of the Commission has been largely discussed by the leading English reviews. It seems, from the report, that these great and rich schools are characterized by inefficiency and dishonesty; the revenues being appropriated by the officers for their private use, and the students being left to to ignorance and demoralization.

A summary of the facts of this report may be found in a convenient form in a pamphlet of 117 pages just published by Sever & Francis, of Cambridge, Mass. They were embodied in a lecture read before the Society of Arts of the Massachusetts Society of Technology, by W. P. Atkinson.

The results of these rich endowments of schools in England are worthy of examination by our own men of wealth, who are making so many similar endowments.

THE FAIR OF THE AMERICAN INSTITUTE.

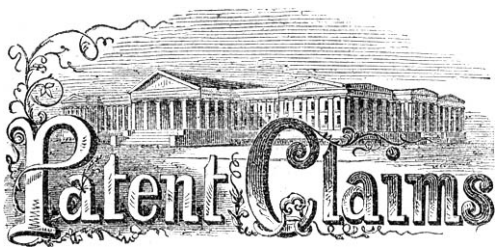
We direct attention to the advertisement on another page of the American Institute. This exhibition, it is hoped, will exceed all former ones, and strenuous efforts are being made to render it a complete success. All persons interested in such matters and able to send anything likely to interest the public, should apply for space immediately. Machinery in motion is to be shown, and the committee in this department are determined to make it one of the prominent features.

THE COLOSSUS OF RHODES.—Dr. C. F. Luders, Professor at the Johanneum at Hamburg, has just published a critical historical treatise on the Colossus of Rhodes, about which the most crude ideas and fabulous exaggerations exist in the public mind. According to the researches of Dr. Luders, this monument, one of the seven wonders, of the world, is reduced to nothing more than a colossal statue, standing on *terra firma* like the Bavaria at Munich, but near the harbor, and dedicated to Phœbus Apollo. He insists upon it that its standing open legged across the mouth of the harbor, and being used as a lighthouse, is a pure invention, and an emanation of fancy from later writers.—*London Builder.*

ST. CLOUD, MIN., is a great place for lumber, and, of course, for saw mills. A sight of the rafts that go by or stop there would astonish people not used to the rough productions of the forest. Recently the advance of Morrison & Smith's drive of eleven million feet, and a portion of Kean's drive of three millions also passed the town. These are owned in St. Anthony and Minnesota. Toby & Morrisons's drive of over a million and a-half feet will be there soon. The greater portion of these will stop at St Cloud, and will furnish the mills with work enough for some time.

WE learn that at the ironworks of Holmberg & Co., at Lund, a new invention has been applied, by which tubes of iron can be cast by centrifugal force. The machine is of very simple construction; it is composed of a cylinder, which can be opened and closed, and into which molten metal is poured. A rapid rotary motion being imparted to the cylinder, the liquid mass is pressed against the sides, and the result is the formation of a perfectly uniform and straight tube. The machine was invented by a young workman named Auguste Larson, and the first trials proved completely successful.

MISFORTUNES OF TALL PEOPLE.—General Scott says that people think he is proud and pompous simply because he is tall and erect. To a recent caller, who expressed surprise at his affability, he remarked, "Sir, it has been the misfortune of my life to be six feet four inches high and have a straight spine. Had I been round shouldered, or had a hump on my back, it would have relieved the odium in the public eye."



ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING JULY 25, 1865.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

48,883.—Valve.—D. D. Allen, South Adams, Mass.:

I claim the valve, A C, in combination with the spring, h, and tongue, i, and belt, d, substantially as and for the purpose described.

48,844.—Cultivator.—W. D. Ament, Muscatine, Iowa:

I claim the adjustable metallic plate, G, formed or cast in one piece, with the bearings, I, substantially as described.

[This invention relates to an improvement in that class of cultivators which are commonly termed "riding cultivators," and it consists in a novel construction of certain parts whereby several advantages are obtained.]

48,885.—Shingle Machine.—Sherman E. Anthony, Stillwater, N. Y.:

I claim the circular saws, C C, when arranged and operating as described, in combination with the endless toothed chains, for the purposes substantially as set forth.

[This invention relates to a new and improved sawing machine of that class in which circular saws are employed for sawing the shingles from the bolt.]

48,886.—Apparatus for Compressing Air.—Wm. Arthur, Brooklyn, N. Y.:

I claim the combination of the air pump employed to compress air with a series of air vessels by means of pipes and stop cocks connecting the air pump and air vessels, substantially as hereinbefore set forth, in such manner that the air which has been compressed into one air vessel may be used to supply the air pump when compressing the air to a greater extent in another air vessel, substantially as herein set forth.

I also claim the combination of the said apparatus with a water force pump to increase the pressure of the air in the last vessel, substantially as herein set forth.

I also claim the conical construction of the vessel of the series into which the air is ultimately compressed, when such vessel is combined with a water force pump, substantially as set forth.

48,887.—Amalgamator.—John B. Atwater, Chicago, Ill.:

I claim, First, The application of oscillating plates, or their equivalents, to the circumference of a cylinder which is arranged to rotate within a vessel, A, substantially as described.

Second, So applying movable plates to a rotating cylinder, or its equivalent, which is arranged within a vessel adapted for containing melted lead or mercury, that said plates will operate automatically for receiving and discharging the quartz, substantially as described.

48,888.—Lady's Work Stand.—John B. Atwater, Chicago, Ill.:

I claim providing a table with one or more trays, or their equivalents, which can be elevated above the top of the table or depressed beneath said top, substantially as described.

48,889.—Device for Operating Window Sash.—James R. Baker, Kendallville, Ind.:

I claim the employment of one or more vertically adjustable spur wheels applied to a window frame, in combination with toothed racks applied to the sashes, said parts being so arranged that the sashes can be connected together and made to counterbalance each other, or the lower sash operated independently of the other, at pleasure, substantially as described.

48,890.—Grain Separator.—H. A. Barnard, Moline, Ill.:

I claim, First, The arranging of a suction fan, B, between the air trunk, F, and the screen and shaking shoe, and in relation to the inlet and exit passages thereof, so that two separations of the grain from its impurities shall take place, while the grain has one continuous path through the machine, substantially as herein described and represented.

I also claim the combined use of an open cam or eccentric, and a coiled spring, for giving a light but rapid shake motion to the sieves, substantially as herein described and represented.

I also claim making the pipe or trunk which carries the feeding spout, d, adjustable, so that it may be turned in either direction to facilitate the "spouting" or feeding-in of the grain to be cleaned and separated, substantially as described.

48,891.—Vessel for Holding Petroleum.—J. W. Barnum and Peter M. McNoah, Detroit, Mich.:

I claim the employment or use of sheet-iron, coated wholly or in part with lead, for making vessels for holding petroleum or other volatile liquids.

[This invention has for its object the construction of a metallic vessel or cask for containing petroleum and other volatile oils and substances, which will not injure the quality of the substance placed therein nor be liable to leakage and wastage.]

48,892.—Drill for Boring Wells.—Caleb Bates, Kingston, Mass.:

I claim, First, In drills for boring oil and other wells, protecting their sides from abrasion, by means of a vitreous or equivalent surface placed in the ends of the arms or vanes on the drill stock, or elsewhere on the stock, substantially as above described.

Second, I also claim the use of leading cutters, S, for splitting the rock, in combination with the wide-cutting surface, R R, substantially as described.

Third, I also claim setting the cutters of the drill at an angle with the axis of the drill stock, substantially as and for the purpose described.

Fourth, In combination with a drill, adapted to operate as described, I claim the swivel, M, constructed and applied in the manner and for the purposes specified.

Fifth, I also claim feeding the rope of the drill automatically, by means substantially as above described.

48,893.—Washing Machine.—Isaac A. Beals, Middleboro, Mass.:

I claim the combination and arrangement of the two reciprocating and connected dashers, C D, and the upright grid, B, applied to the tank.

Also the combination of the same, and mechanism, as described, for operating the two dashers.

48,894.—Washing Machine.—William Beaton, Grinnell, Iowa:

I claim the combination of the reciprocating rubber, B, presser bar, C, springs, D, pitman, E, crank shaft, F G, gearing, H I L M, shafts, J N, spring, Q, and escapement, R S T, all constructed, arranged and operating as and for the purposes specified.

[This invention consists in applying the power of a spring or weight to a reciprocating rubber of a clothes-washing machine, in such a manner that the clothes may be washed without the employment of manual labor.]

48,895.—Axle for Vehicles.—Wheeler Beers, Bridgeport, Conn.:

I claim the application of the springs to an axle, in connection with the tube or thimble, the circumferential projection in the interior of the box, and the nut on the outer end of the axle, substantially as and for the purpose set forth.

[This invention relates to a new and useful improvement in axles for vehicles, whereby a certain degree of longitudinal play is allowed the box of the hub on the axle, and a corresponding degree of lateral play allowed the wheel, whereby the latter will be protected from undue strains, and also from lateral jars or concussions, and much wear and tear prevented, and also the body of the vehicle prevented from being racked.]

48,896.—Stills for Distilling Petroleum.—John Bibby and Allen Lapham, Brooklyn, N. Y.:

We claim, First, The elevated exit chamber, C, in combination with the chimney or flue, B, which passes through the center of the still, substantially as and for the purpose herein set forth.

Second, The perforated cone or dome-shaped plates, E, and gutters, F F, applied in combination with each other within a still, substantially as and for the purpose herein specified.

48,897.—Spring Gaiter.—F. M. Blodgett, Boston, Mass.:

I claim the mode herein described of applying the staples of gaiter fastenings to the flaps of the gaiters.

48,898.—Apparatus for Preserving Food for Transportation.—Maurice Brune, New York City:

I claim the combination and arrangement of the several parts, substantially as and for the purposes described.

48,899.—Car Platform Stake-holder.—C. H. Bryan, Racine, Wis.:

First, I claim the combination of the stake, A, provided with the hole, a, with the bolt, D, and nut, E, arranged and operating substantially as and for the purposes specified.

Second, I claim in combination with the above the employment of the jaws, c, arranged and operating as shown and described.

Third, I claim the combination of the skate, A, socket, B, jaw, C, bolt, D, and nut, E, arranged and operating substantially as and for the purpose specified and shown.

48,900.—Grain Binder.—W. W. Burson, Rockford, Ill.:

First, I claim the arrangement of the jointed arm, A, with the groove, O, to hold the band material perpendicular and out of the way of the gavel, substantially as described and for the purposes set forth.

Second, The combination and arrangement of lever, T, with cam groove, P, and spool, R, substantially as described and for the purpose set forth.

Third, The combination of lever, U, cam collar, S, and pitman, W, with tightening cord, J, substantially as described and operating for the purpose set forth.

Fourth, The combination of the hook, a, with shaft, D, and groove, E, constructed substantially as described and operating for the purpose set forth.

Fifth, The combination of hook, a and b, constructed and operating substantially as described.

Sixth, The combination of hook, c, provided with the cutting point, d', with the receptacle plate, m, having the cutting edge, b', operating substantially as described and for the purpose set forth.

Seventh, The combination and arrangement of the belaying point, h, and recess of receptacle plate, m, with hooks, a and b, operating for the purpose set forth.

Eighth, The projecting blocks, f and f', on alternate sides of the opening in the platform, M, operating for the purpose set forth.

Ninth, The combination of latch, n, lever, o, and forearm, A', constructed substantially as described and operating for the purpose set forth.

48,901.—Balanced Slide Valve.—A. S. Cameron, New York City:

I claim, First, The combination of the diaphragm, C, and rollers, D, and valve, B, constructed and operating substantially as and for the purpose set forth.

Second, The arrangement of cogs or their equivalents at the ends of the rollers and corresponding toothed racks on the backs of the slide valve, substantially as and for the purposes described.

48,902.—Valve for Steam Engine.—J. Wesley Carhart, Cohoes, N. Y.:

I claim, First, The lip or projection, e, extending from the small end of the valve, as and for the purposes set forth.

Second, The recess, f, located at the head, b, of the valve, and communicating with the steam space of the valve through suitable channels substantially as and for the purpose described.

Third, The chamber, h, located in the socket, A, above the thick end of the valve, substantially as and for the purpose specified.

Fourth, The unequal thickness of the abutments on the steam and exhaust side whereby to give lead to the exhaust.

Fifth, The recess or recesses, k, in the socket, in combination with the valve, substantially as and for the purpose described.

48,903.—Glass Furnace.—John Carroll, Longacoming, N. Y.:

I claim the combination and arrangement described of the three fire chambers, H H and G, in respect to the two benches, B B, and side walls, D D, of the furnace for the purpose specified.

48,904.—Valve Gear for Oscillating Engines.—Henry T. Carter, Portland, Me.:

I claim the arrangement of the stationary slotted link, b, projecting latterly from the standard, c, arm, J, valve stem, I, and oscillating cylinder, A, all as and for the purposes specified.

48,905.—Animal Trap.—William F. Caswell, Raynham, Mass.:

I claim the spring jaw-setting mechanism, as constructed with the wheel, t, and the rail or projection, m, combined and arranged with the tripper, D', the latch, e, and the bait trigger applied together as set forth.

48,906,—Insulator for Telegraph Wires.—Lewis A. Cauvet, New York City:

I claim constructing glass insulators for telegraph wires with an internal screw thread and securing them thereby to the bearings, bars or pins of telegraph posts, substantially as above set forth.

[This invention consists in constructing glass insulators for use in telegraph poles in such a way as that they can be secured to the poles in any position without the use of metallic or other attachments.]

48,907.—Flooring or Dust Rack for Carpets.—George J. Colby, Waterbury, Vt.:

I claim a portable flooring, A, to be laid under carpets the same being made of beveled slats secured together in sections with suitable openings to allow the dirt and dust to pass through, as herein specified.

48,908.—Window Shutter.—George J. Colby, Waterbury, Vt.:

I claim a curved corrugated spring acting on the edge of a slat to hold the section of movable slats in any desirable position, as set forth.

48,909.—Knot Latch.—George J. Colby, Waterbury, Vt.:

I claim the knob shaft and cam in combination with the convex plates on both sides of the door so constructed as to form the lever and fulcrum to operate the latch or bolt, as herein described.

48,910.—Clothes Dryer.—Sylvanus Cole, Pawtucket, R. I.:

I claim the combination with the leather or other suitable flexible bonds, h, by which the cross rods of the swinging clothes frames are hung upon their common center post or standard of the intermediate collar plates, m, made of metal or other suitable material, arranged together substantially as and for the purposes specified.

[This invention relates to a clothes horse in which a series of vertical hanging frames are hinged to and revolve upon a common center post or standard and consists in a novel and peculiar manner of bringing the same thereto, whereby a substantial and durable clothes-horse is produced, and one which in case of breakage of any portion of it, can be easily and readily repaired without necessarily detaching all the parts composing the horse, from each other.]

48,911.—Bag Holder.—J. S. Corbin, Ann Arbor, Mich.:

I claim the combination with the fixed band, a, of the swinging frame, f, when the latter is provided with the bent spring or arm, n, and arranged to operate in the manner described.

[For an illustration and description of this invention see SCIENTIFIC AMERICAN, No. 5, current volume.]

48,912.—Machine for Cleaning Flower Pots.—S. W. Curtis, Stoughton, Mass.:

I claim the mechanism for grasping and holding the pot, the same consisting of the movable jaws, d d, their slide bar, B, the levers, e e, the toggles, g g, the lever, f, the rack, h, as specified.

I also claim the combination of the water tank or tub, A, with the apparatus for holding the pot and with that for cleaning it, as described.

I also claim the combination of the slider, p, its clamp, g, with the slider, u, the brush lever, r, and its pressure spring, t, and the cam mod lever, 4, the whole being arranged and so as to operate together, substantially as specified.

I also claim the combination of the longitudinal adjusting carriage, D, and its clamping devices, k k l m, with the spindles, C.

I also claim the combination of the conical holder, b', and the spring, c', with the spindle, C, and the holding jaws, d d, and the brush, s, and the mechanism for revolving the brush, as specified.

48,913.—Manufacture of Friction Matches.—Gideon G. Dennis, Dover, N. H.:

I claim arming or applying the igniting materials or composition to each or both ends of the match stocks or splints, so as to make each splint or stick some far time lightings instead of one.

I also claim making matches by cutting or sawing into each end of a block, card or sheet of match material, so as to leave the splint jointed at the middle, substantially as described, and then applying the igniting material or composition to both ends of the stocks or splints so made or formed.

48,914.—Rock Drill.—J. C. Dickey, Saratoga Springs, N. Y.

I claim the combination of the drill, A, with the reamer, C, substantially as described and set forth.

48,915.—Machine for Rolling Irregular Forms.—James Dodge, Waterford, N. Y.:

I claim the mechanism for driving the said pattern or cam rollers or segment with a positive motion, that is, by gear for starting the patterns or cams, by the introduction of the article to be shaped and for stopping the movement by the action of the machine itself, all substantially in the manner as herein described.

48,916.—Flour Sifter.—John Earnshaw, Lowell, Mass.

I claim the combination of a sifting device with a flour or meal scoop, substantially as set forth.

[This invention consists in the employment, in a scoop, having a portion of its rear part made of wire gauze, of a roller having wings arranged on its surface and parallel with its length, for forcing, by rubbing or scraping, the meal or flour through the meshes of the sieve.]

48,917.—Spinning Machine.—Wm. Eberhard, Sigourney, Iowa:

I claim, in combination with the feeding head and the drawing rollers, the spindles and spire, arranged and operated as set forth.

48,918.—Annealing and Polishing Sheet Iron.—J. W. Ells, Pittsburgh, Pa.:

I claim annealing and polishing sheets of iron by placing them in a tight cast-iron box or muffle, with scales or oxide of iron, animal charcoal, coke, lime, or other decarbonizing and cutting agents, and imparting sufficient motion to the box or muffle while in the furnace to agitate the sheets of iron to such an extent as well polish them by the attrition of the annealing and cutting agencies during the operation of heating and cooling, whereby they are given the peculiar mottled and polished appearance of Russia sheet iron.

48,919.—Safe Lock,—John Farrell, New York City:

I claim combining the bolt or bolts, by which the door is secured, with the bolt of the lock by a mechanism, substantially such as described, operated by the lock bolt to lock the door bolt or bolts, and which, when violence is applied to the lock, will permit the lock bolt to separate from it without unlocking the door bolt or bolts, as set forth.

48,920.—Road Scraper.—Edward A. Field, of Sidney, Maine:

I claim the combination and arrangement of the levers, i i, in or the said levers and the wheels, t t, with the road scraper composed of the sled and the scraping bar or their equivalents, substantially as described.

48,921.—Steam Whistle.—Abraham Fitts, Worcester, Mass.:

I claim, first, The combination of two bells with an intermediate chamber, having an annular passage opposite the edge of each of the bells, substantially as and for the purpose set forth.

Second, Combining in a whistle operated by steam or compressed air, two bells tuned so as to produce musical chords, substantially as herein described, for the purpose of increasing the intensity of the sound.

[This whistle is operated by steam or hot air, and is composed of two bells with an intermediate chamber having an annular steam or air passage opposite the edge of each of the bells in such a manner that, by admitting steam or compressed air to said chamber, both bells are sounded simultaneously, and a sound of increased intensity is produced. In order to increase the intensity of the sound still further, and render the whistle particularly fit for a signal gong, the the two bells are so tuned as to produce musical chords.]

48,922.—Bag Fastener.—Addison C. Fletcher, New York City:

I claim the fastening for bags and sacks, constructed as herein described, and operating in the manner substantially as herein set forth.

48,923.—Cooking Stove.—D. P. Foster, Shelburne Falls, Mass.:

I claim, first, The fire-box or grate, A, provided with the holes, c c c, or their equivalents, in combination with the slotted frames, B, constructed and arranged to operate substantially as and for the purpose herein set forth.

Second, I claim the movable stand composed of the end pieces, B B, united by the bar, J, in combination with shaft, F, pinion, E ratchet, H, and pawl, I, for the purpose of supporting and adjusting the krate, A, as and for the purpose described.

48,924.—Hoop Skirt.—Henry Frendenburg, New York City:

I claim the spiral wire in combination with the tubular web, substantially as and for the purpose described.

48,925.—Shutter Lock.—Samuel S. Garver, Hamilton, Ohio:

I claim the door or shutter look herein described, consisting of the case A, rack bolt, B, pinion or segment, C, projection, e, notch, i, and friction spring, D, all constructed and arranged substantially as and for the purpose specified.

[This invention consists in the use of a rack bolt and a pinion or part pinion, arranged and applied in a very convenient and economical manner.]

48,926.—Railroad Car Rail Coupling.—Henry A. Gilman, Buffalo, N. Y.:

I claim the combination of the base plate, A, and clamping bar, C, and tightening wedges, D, or equivalents thereof, for the purposes and substantially as described.

48,927.—Register for Counting Revolutions.—Victor Giroud, New York City:

I claim the arrangement and combination of the ratchets, b, pawls, I, toothed wheels, a d, notched wheels, c, and the single toothed disks, e, applied respectively to the heads or collars, E, wheels, F G, and shaft, P, to operate in the manner substantially as and for the purpose specified.

48,928.—Gage for Setting the Pitch to Wagon Axles.—John Gorton, Providence, R. I.:

I claim the adjustable gage, described as figure 2, or its equivalent, in combination with the machine described as figure 1, or its equivalent, the whole substantially as described, for the purposes as set forth.

48,929.—Roller Skate.—W. P. Gregg, Boston, Mass.:

I claim a roller skate constructed with a stock having a small supporting roller under each end and a large driving roller on each side, substantially as described.

48,930.—Amalgamator.—Ira T. Halstead, Fredonia, N. Y.:

I claim a concave disk, provided with openings at the sides and in its center, in combination with a muller revolving in a tub with a flat or concave bottom, substantially in the manner and for the purpose set forth.

[This invention consists in the employment of a concave disk provided with openings at the sides and in its center, in combination with a muller revolving in a tub with a flat or concave bottom, in such a manner that the quartz or other material which is to be acted upon by the muller, and which, in consequence of the centrifugal force has a tendency to accumulates near the inner periphery of the tub, is caused to rise through the openings on the circumference of the disk, and to descend over its concave side to the center, where it passes back into the tub.

48,931.—Boot-blacking Case.—F. G. Harding, Boston, Mass.:

I claim the combination of the chair, a, hinged seat, b, and foot rest, g, arranged as herein specified, for the reception and use of boot blacking appliances.

[For an illustration and description of this invention, see SCIENTIFIC AMERICAN, No. 12, Vol. XII.]

48,932.—Gas-lighting Device.—John G. Harper, New Yotk City:

I claim a case or jacket provided with a lamp for burning oil or other suitable material, and having an opening or aperture made in it, in such a relative position with the wick tube of the lamp, as to admit of the case or jacket being applied to a gas burner to ignite the gas issuing therefrom, substantially as set forth.

48,933.—Wringing Machine.—M. Harris and R. G. Bush, Jamestown, N. Y.:

We claim the arrangement of rubber rollers upon shafts which have their ends extended and constructed so that handles can be applied to each or both when said rollers and shafts are used in a frame, for the purpose of wringing clothing, as is herein fully set forth.

48,934.—Apparatus for Washing Tumblers.—Barney Hart, Washington, D. C.:

I claim the arrangement and combination of the apparatus with the water pipes and grating above, by which a continual jet of water is projected into each tumbler or glass so as to cleanse and rinse the glass completely, as herein described.

48,935.—Construction of Flat-bottomed Boats.—Herman Haupt, Cambridge, Mass., and J. Y. Smith, Alexandria, Va.:

We claim the construction of boats or barges, substantially in the manner and for the purposes herein set forth.

48,936.—Cigarette Paper.—F. X. Hazman and L. L. Arnold, New York City:

First, We claim the manufacture of cigarette paper coated on one side with an adhesive substance, dried, and whether the same is applied to the whole surface or to the margin only.

Second, The manufacture of cigarette paper coated on one side with a substance which, when dried, shall shrink so as to give the paper a tendency to curl.

Third, The employment of the ingredients compounded in the proportions and manner herein described, for a mucilage or paper coating, for the purpose set forth.

48,937.—Trunk Caster.—William O. Headley, Newark, N. J.:

I claim a combined bracket and caster for trunks, when the former is cast with an exterior projection or projections, e, and with lays or projections, d d, at the inner surface of one of its arms, a, by the side of the opening, b, which receives the caster or roller, B, and on lags or projections the axis of the caster or roller is fitted, substantially as described.

[This invention consists in combining, in a novel way, a trunk caster and a bracket, so that the device may be cheaply manufactured and be very strong and durable, and serve as an efficient protection for the angles of the trunk, and at the same time admit of the trunk being readily moved or rolled about.]

48,938.—Rotary Pump.—Geo. W. Heeld and L. D. Cisco, Baldwinsville, N. Y.:

We claim the construction of the piston, B, consisting of the rim, b, and hollow arms, c c, arranged and operating substantially as and for the purpose herein set forth.

48,939.—Table or Desk.—William Hemmer, Newark, N. J.:

First, I claim connecting the boards, D C and B, together, as described and for the purpose specified.

Second, The arms or frames, E F, connected to the board, C, substantially in the manner and for the purposes herein specified.

Third, The frame or rest, a, in combination with the frame, E, substantially as described.

Fourth, The thumb screws or screw rods, b and d, in combination with the frames, E and F, substantially as described.

Fifth, The combination and arrangement of all the parts, substantially as herein shown and described.

[The object of this invention is to construct a table whose top can be raised at various angles and hights, so as to provide a desk, on which to write or draw, that will suit different persons either sitting or standing; and it consists in the use of a number of supporting frames or legs, so arranged that each will give to the top of the table a different hight and inclination.]

48,940.—Rudder.—Jonas Higbee, Northport, N. Y.:

I claim the applying of rudders to vessels either at the bow or stern, or at both said places, in the manner substantially as shown, so that the rudders will be capable of being reversed, turned outward from the recess or openings, a, when necessary, as when used as a stern rudder, or turned inward so as to fit in said openings when used as a bow rudder, as set forth.

[This invention relates to a new and improved rudder which may be used either at the bow or stern of a vessel, and is so arranged or applied that it will be capable of being reversed and used as a stern rudder, and when not reversed used as a bow rudder.]

48,941.—Apparatus for Cooling Liquids.—Peter and Frederick Hinkels, New York City:

We claim the mode of refrigerating beer and other beverages herein fully described and for the purpose set forth.

48,942.—Watch.—Samuel Hittel, Detroit, Mich.:

First, I claim the curve spring, d, in combination with the movable stud, a, and hair spring, b, constructed and operating substantially as and for the purpose described.

Second, The curve spring, k, in combination with the regulator, j, spring, b and balance, h, constructed and operating substantially as and for the purpose specified.

[This invention consists in the use of a movable hairspring stud in combination with the hairspring of a watch, in such a manner that the watchmaker is enabled to get a correct beat in a short time and with little trouble. In connection with the movable hairspring stud an undulating spring is used for the purpose of overcoming the effect of the atmosphere on the hairspring and of keeping the watch in beat. The invention consists, finally, in an undulating spring attached to the regulator in such a manner that the effect of the atmosphere on the balance is overcome, said regulator being connected directly to the hairspring.]

48,943.—Boot Heel.—Samuel Hodgins, St. Louis, Mo.:

I claim the adjustable plates, B and C, in combination with the heel of a boot or shoe, arranged to operate in the manner and for the purpose herein specified.

[The object of this invention is to obviate the running down of the heel of a boot or shoe, caused by the wearing away of one part sooner than the other; and it consists in the employment in the heel of a boot or shoe of a metallic plate extending, either wholly or in part, down to the treading surface of the heel, said plate being bent round so as to correspond with the shape of the heel; and the said plate having its inner or upper end beveled in such a manner that a correspondingly beveled plate, arranged over the same, in the heel of the boot, may be caused to force it out by means of a set screw or any other suitable device, and which may be retained in position when out, by a similar device.]

48,944.—Horse Rake.—J. Hollingsworth, Chicago, Ill.:

First, I claim a scroll rake tooth constructed with the transverse eye, c, arranged relatively thereto, substantially as herein described and represented, for the purpose set forth.

Second, the arrangement of the scroll teeth upon a continuous head or bar, E, which is hung to the axletree, A, in such manner that they enter grooves in the head, E, so as to be stayed laterally and pass under the head, E, and at the same time are susceptible of being removed and replaced independently of one another, substantially as herein described and shown.

Third, The arrangement of the foot and hand lever, G G, adjustable goose-neck brackets, a a, oscillating head, E, and axletree, A, in the manner and for the purpose described.

Fourth, The arrangement of the rod, J, forked lever, l, spring, s, pulley, k, chain or cord, i, goose-neck brackets, a a, head, E, and foot and hand levers, G G, substantially in the manner and for the purpose described.

Fifth, The arrangement of the hand and foot lever directly on the rake head, E, which is hung in goose-neck brackets, a a, substantially in the manner described.

Sixth, The combination of the goose-neck brackets, a a, slide rod, J, and rake head, E, in the manner and for the purpose described.

48,945.—Piston Packing.—J.W. Holloway, Akron, Ohio:

I claim the beveled rings, b b, and circular springs, c c, in combination with the solid ring, D D, when arranged and operating substantially as and in the manner described.

48,946.—Machine for Trimming Hedges.—W. C. Hooker, Abington, Ill.:

I claim a machine for trimming hedges, constructed substantially as herein shown and described.

[The object of this invention is to provide a machine whereby hedges or hedge fence may be trimmed easily and rapidly and accurately, the several stalks being cut at the same hight which is quite essential when a neat and even line of hedge is desired; and the invention consists in constructing a suitable frame, intended to stand over or straddle the hedge, and in arranging on said frame a cutter on one side and a block against which to cut on the other, both having a wringing motion and capable of being moved forward and backward the length of the frame as occasion may require during the operation.]

48,947.—Lawn Mowing Machine.—James A. and Henry A. House, Bridgeport, Conn.:

We claim the combination of the finger beam frame, vibrating cutter, cam gear and breast piece, arranged and operating substantially in the manner described for the purpose set forth.

48,948.—Cleaning Tubes in Boilers.—Joseph Jacob Illingworth, Brooklyn, N. Y.:

I claim the nozzle, E b, and flexible pipe, D, applied substantially as herein described, for cleaning flues or tubes of steam boilers.

[This invention consists in cleaning the flues and tubes of steam-boilers by means of a jet or current of steam directed through said tubes.]

48,949.—Broadcast Seeding Machine.—E. S. Jewett, Lima, Mich.:

I claim the adjustable sleeve, E, in combination with the seed slides, D, revolving cylinders, A, and hand lever, F, constructed and operating in the manner and for the purpose substantially as herein shown and described.

48,950.—Skate.—E, Johnson, Jr., Cleveland, Ohio:

I claim the standards, A A' a a', plates, C G, springs, F f, flanges or guides, h h, and shank, e, when the several parts are arranged as herein described, and operating as specified.

48,951.—Road Scraper.—Wm. W. Johnson, Harrison, Maine:

I claim the combination and arrangement of the vibratory scraping board with the axle and its wheels, the furcated tongue, and the mechanism for regulating the inclination of the scraping board, as specified.

I also claim the combination of the side wings or plate, c c, with the vibratory scraping board applied to and arranged with an axle to its wheels and tongue, as specified.

I also claim the combination of the stop, g, and the bar, d, with the furcated tongue, and the vibratory scraping board applied to an axle and wheels, and having a mechanism, as described, or equivalent, for varying the inclination of the board, as set forth.

48,952.—Stove-pipe Damper.—Chas. Kathan, Hardin, Iowa:

I claim the revolving disks, B B, arranged to operate in connection with the central portion or frame, A, of a damper for stoves and other heaters, substantially as herein specified.

[This invention consists in the employment or use of two revolving disks, one arranged on each side of the central portion or frame proper of a damper for stoves and other heaters, and in such relation thereto that the escape of the heated air and other products of combustion may be controlled as desired.

48,953.—Paper Knife-handle.—Edward Kelsey, Center Brook, Conn.:

I claim the combination with a dowel pin, inserted within and across the joint of the contiguous ends of the handle and the knife-blade shank of the inclined grooves or channels, substantially as herein described and for the purpose specified.

[This invention relates to a new mode of securing the handles to the blades of paper knives, whereby a more secure and permanent joint is made than by the method hitherto practised.]

48,954.—Mode of Receiving and Delivering Mails and Packages on Railroad Cars.—W. J. Ketcham, Washington, D. C.:

I claim receiving and delivering upon lines of railroad communication mails and packages, by means of devices connected to the railway car, and operated at the several points of delivery, in the manner herein described.

48,955.—Machine for Pressing Tobacco.—J. D. King, Cincinnati, Ohio:

I claim the employment or use of a series of rollers, K, placed loosely on a shaft, I, provided with adjustable bearings, in combination with a reciprocating bed, C, provided with a series of removable boxes or troughs, G, corresponding in width to the rollers, substantially as and for the purpose set forth,

[This invention relates to a new and improved machine for pressing tobacco into plugs, and it consists in the employment or use of a series of pressure rollers, in connection with a reciprocating bed, provided with molds having false or supplemental bottoms, whereby the desired work is done very expeditiously and in a perfect manner.]

48,956.—Paddle Wheel.—C. A. Kirkpatrick, Somerville, Mass.:

I claim the combination of the movable slats with the cam slot, when arranged and operating as and for the purpose specified.

Second, The adjustable gates, applied in combination with the cam slot and movable slats, in the manner and for the purpose described.

Third, The combination of the double ratchet, double cam and movable gates, all constructed, arranged and operating as herein described, to constitute an automatic reversing gear.

[This invention relates to a paddle wheel, the buckets of which are made each of a series of movable shutters or slats, similar to an ordinary window blind, in such a manner that the said slats can be turned edgewise as they descend in and rise out of the water, and to close up while passing through the water in a position to offer a very extended working surface to the water.]

48,957.—Horse Chain.—Homer W. Knowlton, Saratoga Springs, N. Y.:

I claim constructing the T ends of horse and other chains, with a joint in their shanks, to operate substantially as and for the purpose herein set forth.

[This invention relates to a new and useful improvement in the T-end of a horse chain, which is fitted in a ring of the latter in order to attach the chain of a heater to a post or other fixture, or which is fitted in the ring of a bit, in order to attach the horse to the post.

48,958.—Device for Finishing Threads.—Tobias Kohn, Hartford, Conn.:

First, The described concave-faced rollers, on which to wrap the threads to be finished by the longitudinal motion of the carriage on which the rollers are mounted.

Second, Placing the alternate rollers on axis at or nearly at right angles to each other, so as to partially counteract the tendency of the thread to transverse lengthwise of the rollers.

48,959.—Cultivator.—Frederick C. Leffler, Highland Township, Iowa:

I claim the draught bars, L, attached to the rear bar, E, by pivots, e, and uprights, f, and secured to the upright bars, A, by a rod, G, substantially as and for the purpose set forth.

[This invention relates to a new and improved cultivator, designed to be drawn by two horses, and for the cultivation of those crops which are grown in hills or drills.]

48,960.—Sash Fastener.—George Liming, Roxbury, Mass.:

I claim the improved sash fastener, with the cam and spur, formed, and operating as described.

48,961.—Sap Spout.—Archibald Leitch, Ryegate, Vt.:

I claim a sap spout, made of an outer wooden tube, inclosing a metallic tube, substantially as and for the purpose above described

[This invention consists in a novel construction of spout for collecting saccharine sap from maple and other trees, being a combination of metal and wood, for the purpose of securing the advantages of both those materials, without causing injury to the trees by bringing metallic surfaces in contact with them.]

48,962.—Button-hole Cutter.—F. C. Leypoldt, Philadelphia, Pa.:

I claim the described improvement in instruments for cutting button holes, consisting in the use of the self adjusting block, B, when the same is constructed in relation to the knife, C, substantially as and for the purpose herein set forth.

48,963.—Tweer.—D. S. Loy, Graceham, Md.:

I claim the blast plate, C, having a deflected slit opening, and capable, by change of position, of directing the blast in the direction required, as described and represented.

48,964.—Skiving and Splitting Machine.—W. S. Marsh, Indianapolis, Ind.:

I claim the inclined slide plate, D, the adjustable roller, L, placed over the knife, with its boxes, K K, and rods, P P, the springs, J J, all in connection with the knife, B.

I also claim the check rib, O, and set screw, H, all arranged and operating substantially as and for the purpose set forth.

48,965.—Meat Chopper.—John Massey, New York City:

I claim the combination of the horizontally reciprocating platform, f f, and driving devices, consisting of the shaft, q, cog-wheel, p, pins, o, and groove, m, with the knives, n' n' n', jointed connecting rods, g' h', and crank shaft, b', arranged to operate in the manner and for the purposes specified.

[This invention consists in the use of a horizontal reciprocating traveling platform or box, in which the meat or other material to be chopped is placed in combination with any suitable cutters, so arranged that as the meat box is moved forward and backward they shall be made to cut or chop the material therein.]

48,966.—Cartridge Retractor for Breech-loading Fire-arm.—Edward Maynard, Washington, D. C.:

I claim the combinatipn of a retracting slide, B, with the barrel, A, and curved link, C, of my improved breech-loading fire-arm, substantially in the manner and for the purpose herein set forth.

48,967.—Apparatus for Burning Petroleum.—E. McKinney, Middletown, Pa.:

I claim the method herein described of generating heat and light from the combustion of petroleum or other hydro-carbon, crude or refined, by introducing it through pipes controlled by stop-cocks passing through any proper refrigerating medium, to keep said pipes cool, and prevent the transmission of the generated heat to the reservoir of oil into the place or places of combustion, and there mixing it with a refractory material pulverized, so that the pipes are protected from the fire, the oil being supplied in such quantity as merely to saturate the mass of material with which it is mixed, and being drawn to its surface by capillary attraction, substantially as above set forth.

[This invention consists in a new method of generating heat by the burning of petroleum, and it is applicable to domestic and culinary purposes, to producing steam in boilers, and generally to every use where heat is required.]

48,968.—Carpet Stretcher.—H. A. Mead, Cuba, N. Y.:

I claim the combination of the hand lever, b, and foot plate, n, constructed, arranged and operating together, substantially in the manner described and for the purpose specified.

[This invention relates to a carpet stretcher, made and constructed in such a manner as to obviate the many objections to those now in common use.]

48,969.—Governor Valve for Steam Engine.—Samuel Mills, Bergen, N. J.:

I claim the cylindrical valve tube, B, sliding over the cup, C, they both having a series of openings through on all of the sides, so as to form an equilibrium governor valve for steam engines, as herein described.

48,970.—Preparing Sponge for Stuffing Padding, Etc.—A. T. Moith, Fishkill Landing, N. Y.:

I claim the method herein described of preparing sponge, for the purposes set forth.

48,971.—Machine for Boarding Leather.—W. H. Moore, Salem, Mass.:

I claim the combination and arrangement of the table, A, the presser board, C, the endless apron, H, and its operative rollers, the whole being applied together in manner and for the purpose as specified.

And in combination with the table, A, the presser, C, the endless apron, H, and its carrying and operating rollers, I claim the open chamber or box, B, for the purpose specified.

And I also claim the combination of the elevating spring, L, or its equivalent, and the stirrup, N, with the presser, C, the table, A, the endless apron and its operative rollers, the whole being substantially as specified.

48,972.—Method of Protecting Caps of Oil Cans.—E. A. More, St. Louis, Mo.:

I claim a protection for the nozzles of oil cans, consisting of a metallic cap, A, closely fitting the nozzle and cork, one side of the cap being left open, so it may be slid laterally upon the cork. The cap, A, being furthermore provided with the lugs, a a, which will be perforated with the holes, b b, for fastening it to the box or can.

48,973.—Composition for Castings.—George Nimmo, Jersey City, N. J.:

I claim the compound metal formed in the manner specified.

48,974.—Adjustable Tweer.—Butler G. Noble, New York City:

I claim the method of regulating the quantity of air relative to steam by adjusting the steam jet or tweer within the opening for the air, substantially as and for the purposes specified.

48,975.—Row Lock.—Joseph W. Norcross, Middletown, Conn.:

First, I claim placing the fulcrum on which the row lock swivels outside the center of its horns and above the gunwale, substantially in the manner and for the purpose set forth.

Second, The hook, c, and staple, d, in combination with the flanged plate, E, and with the bracket supporting the stanchion or fulcrum of the row lock, or any other equivalent fastening, substantially as and for the purpose specified.

Third, The flange, e, with the open slot, f, in combination with the row lock, C, constructed and operating substantially as and for the purpose set forth.

[The object of this invention is three-fold:—First, to construct a row lock which will operate without or with but little noise, and so that the oar may be temporarily left in the same without danger of unshipping, thereby giving an opportunity to the person rowing to relieve himself by wiping the sweat from his brow, or in some other way; second, to make the row lock so that the oar might swing parallel to the boat or "trail;" third, to arrange it so that the same can be readily unshipped and taken home to prevent it from being stolen.

48,976.—Railway.—Pelatiah Osgood, Waterville, Me.:

I claim the use of the movable or swinging rail operated with regard to the track, c c, by means of the arms, p p, drum, h, bands, l l, lever handle, f, and connecting bars, e e, substantially as described.

48,977.—Flood Gate.—Andrew Ralston, Carlisle, Pa.:

First, I claim the combination of the float, F, and arms, E E', and upright gate, A A, in the manner and for the purpose within described.

Second, The movable block, G, when combined with float, F, and hook, H, in a flood gate, constructed in the manner and for the purpose herein described.

48,978.—Mode of Switching Street Cars.—John S. Reid, Muncie, Ind.:

First, I claim shifting or switching cars from one track to another by pressure upon the outside of the rail or track, substantially as herein specified.

Second, I claim the employment of the adjustable wheels, C C, provided with exterior flanges, arranged and operating substantially as and for the purposes shown and set forth.

Third, I claim the combination of said wheels, C C, the shaft, D, and springs, d d, arranged and operating as and for the purposes described.

Fourth, I claim the combination of the wheels, C C, axle, D, springs, d d, lever, E, and arm, F, arranged and operating substantially as shown and described,

48,979.—Dough Kneader.—Francis C. Ring, Portland, Me.:

I claim the employment and use of revolving kneader, B, with troughs, in combination with springs, D, and spring fastenings, d and d', substantially as and for the purpose set forth.

48,980.—Lock.—Fred. Rudolph, New York City:

I claim a lock with a cylindrical case, B, containing a bolt, D, and one or more tumblers, E, to be operated by a key, K, which can be introduced from either side, substantially as and for the purpose set forth.

Also, the latch, F, in combination with bolt, D, and tubular or cylindrical case, B, constructed and operating substantially as and for the purpose described.

[This invention relates to a lock in which the bolt, with one or more tumblers, and also the latch, is inclosed in a cylindrical case, which can be inserted in a door by boring in a hole large enough to take said case, and thereby the time requisite to make a mortise for the reception of the lock is saved. The latch is so arranged that it operates in a slot in the head of the bolt, or it may be made to work side by side with said bolt, the latch being made to work by a handle, and the bolt by a key, in the usual manner.]

48,981.—Apple Corer and Slicer.—Samuel Saucerman, Freeport, Ill.:

I claim the pointed plunger, C, in combination with the pointed tubular corer, A, slicing knives, B, and top plate, D, constructed and operating as and for the purpose set forth.

[The object of this invention is a simple, cheap and effective device, by which apples, after the same have been pared, can be cored and quartered by one operation, and with little loss of time.]

48,982.—Evaporator.—Thomas and James M. Scantlin, Evansville, Ind.:

First, We claim the constructing of the furnace, A, of semi-cylindrical taper form, substantially as and for the purpose set forth.

Second, Having the evaporating pan, E, constructed in sections, or formed of a series of pans, b, constructed, connected together and secured between the wooden sides, c c, in the manner substantially as and for the purpose specified.

Third, The passages, e e', made or placed in the wooden sides, c c, and arranged with screens, gates, h, substantially as set forth.

[This invention relates to a new and improved evaporating pan for evaporating sorghum and other saccharine juices. The invention consists in a novel construction of the furnace and pan, whereby it is believed that several advantages are obtained over devices for a similar purpose.]

48,983.—Oil Well Pump.—Henry Searl, Rochester, N. Y.:

I claim the arrangement of the pipes, G and t, with the valve, K, and the seed bag, F, or other suitable packing, substantially as herein described, not claiming separately either the seed bag, the valve or the pipes, as I am aware that they are in common use for many purposes.

48,984.—Jack for Shaft Coupling.—A. J. Settle, Schoharie, N. Y.:

I claim a tool composed of two jaws, A B, formed and connected substantially as herein described and for the purpose set forth.

[This invention consists in a tool composed of two arms or jaws and a handle. One of the jaws is intended to catch the clip of a shaft coupling behind the axle, and the other jaw is to bear on the eye of the joint in such a manner that by the combined action of said jaws the eye can be forced in between the jaws of the clip against the elasticity of the india-rubber or other packing applied to prevent the rattling of the joint, and thereby the operation of introducing the eye-bolt is materially facilitated.]

48,985.—Bread Cutter.—S. D. Simmons, San Francisco, Cal.:

I claim the bread cutter described, the same consisting in attaching and arranging upon a suitable shaft a series of knife blades, of any desired number and size, and at proper distances apart, said shaft being provided with a suitable handle, and arranged and operating with regard to the fixed platform used for receiving the bread to be cut substantially in the manner as hereinabove set forth.

[For an illustration and description of this invention, see No. 4 of current volume.]

48,986.—Turbine Fan Blower.—Marvin Smith, New Haven, Conn.:

I claim the combination of the annular disks or casings, B B, with the vanes or blades, b b and c, when the whole is constructed, arranged and fitted to operate with the parts C and D, substantially as herein described.

48,987.—Churn.—Henry Soggs, Columbus, Pa.:

First, I claim a recess, N, made in the churn cover, having air holes, N', in combination with the hollow cap, C, for the purpose of an improved vent, substantially as described.

Second, The combination and arrangement of the revolving disk, B, including the crank pinion, C, and common churn placed thereon, and bottom stand, A, including the cog rim, a', with the connecting rods, I, and cross head, H, for the purpose of operating a common dash churn, substantially as set forth.

48,988.—Harvester.—Edwin F. Page, Brooklyn, N. Y.:

First, I claim the combination and arrangement of the arms, M M', of the cradle shaft or handle with the studs, J J', on the stationary shaft, I, whereby the cradle is made to stand upright while cutting the grain, and to tilt forward and deliver the cut grain, as set forth.

Second, The combination and arrangement of the shaft, H, head, I, studs, J J', sleeve, F, and case, G, or their equivalents, for the purpose of carrying and operating the cradle, T, substantially as set forth.

Third, The jointed platform, C, in combination with the jointed shaft, e, substantially as set forth, for the purpose described.

48,989.—Stand for Lady's Cloak.—Joseph R. Palmenbery, New York City:

I claim the construction and arrangement of a revolving frame, F, on an upright stand or rod, B, in the manner and for the purpose substantially as described.

48,990.—Evaporater.—Isaac H. Palmer, Lodi, Wis.:

I claim a revolving skimmer for removing the scum from the surface of the liquid.

The combination of the skimmer with the belt or endless chain and the rollers, C D E.

The skimmer with its central divisional groove, H, in combination with the pan divisions, B, or wires, upon which it transverses.

The screw in the said divisional groove by which the depth of the skimming is regulated.

The cleaner is so placed as to wipe out the contents of the skimmer in the manner described.

The hook in combination with the chain and skimmer for retaining the latter in an inoperative position when required.

I claim the skimmer divided or otherwise hinged in a carriage or holder attached to the endless carrier belt or chain.

48,991.—Combined Corn Planter and Cultivator.—Jeremiah Palmer, Oriskamy, N. Y.:

First, I claim the movement of the feed bars, G G, in the hoppers by means of three outwardly projecting cogs, k k k, on the main wheel, the three tooth cog wheel, J, notched lever, I, and one tooth cog wheel, the whole combined and operating substantially in the manner and for the purpose herein set forth.

Second, The lever, I, in combination with the three tooth cog wheel, J, for breaking the revolution of the wheels or stopping the operation of the feed bars, substantially in the manner and for the purpose herein set forth.

Third, The tongue, L, and lever, M, in combination with the bracket plate, o, joint, o, fulcrum, S, and guide, N, when constructed and operating as and for the purpose herein set forth.

Fourth, The vertical hand screw, K, cross plate, n, bearing plates, a'', in combination with the axle, B, open slotted guides, n n', for the depression or elevation of the wheels, substantially in the manner and for the purpose herein set forth.

Fifth, The notched sliding frame, o', and guide, N, in combination with the axle, B, and foot lever, M, substantially in the manner and for the purpose herein set forth.

48,992.—Manufacture of Hard Rubber or Vulcanite.—Dubios D. Parmelee (assignor to Chas. S. Richards) New York City:

I claim the method herein described of producing hard rubber or hard and flexible rubber or hard flexible and elastic rubber by subjecting native rubber first to the vulcanizing process according to the invention patented to Charles Goodyear deceased, on the 15th day of June, 1844, and by their immersing the vulcanized rubber thus obtained in chloride of sulphur dissolved in bi-sulphide of carbon or other fit solvent of caoutchouc, substantially as set forth.

48,993.—Manufacture of Hard Rubber.—Dubois D. Parmelee (assignor to Charles S. Richards) New York City:

First, I claim the production of a hard or hard and flexible and elastic compound by the process herein described the same consisting substantially in first converting india-rubber or like gums into a soft, flexible and elastic product resembling soft, vulcanized rubber by immersion of rubber in a solution of proto-chloride of sulphur and bi-sulphide of carbon in the manner described and in converting the soft, flexible and elastic product into a hard and flexible or hard flexible and elastic product by immerisng the product of the first immersion in a solution of proto chloride of sulphur and bi-sulphide of carbon, sudstantially as herein set forth.

Second, As a new product or substance I claim a hard or hard and flexible or hard, flexible and elastic compound composed of india-rubber or other similar gum which has been subjected to two or more immersions in solutions of proto-chloride of sulphur and bi-sulphide of carbon, substantially as herein described.

Third, As a new manufacture or substance, I claim colored hard or colored hard and flexible or elastic compound, composed of rubber having incorporated with it colored figments as described and subjected to successive immersions in solutions, substantially as set forth.

48,994.—Device for Oil Wells.—George T. Parry, Philadelphia, Pa.:

I claim the arrangement of the heater, B, with the induction and eduction pipes, C C', and the oil well tube, A, substantially as described.

48,995.—Faucet.—Geo. G. Percival, Brooklyn, N. Y.:

I claim the combination with a faucet of the split ring, f, arm, d, and screw pin, p, substantially as shown and described.

[This invention consists in a novel construction and arrangement of a faucet whereby the distance to which it opens can be regulated at pleasure so as to allow a greater or lesser quantity of liquid to pass through it, when the cock is turned in one direction, while by reversing the movement the cock can be opened to its full extent.]

48,996..—Tumblers, Pitchers, Etc.—Geo. G. Percival, Brooklyn, N. Y.:

I claim as a new article of manufacture the attachment of a rim made of india-rubber or any of its elastic compounds to and upon the bottom edges of tumblers, glasses, pitchers and other articles of crockery or glass ware, substantially as and for the purposes specified.

[This invention consists in attaching to tumblers, glasses, pitchers and other similar articles made of crockery or glass, and so as to extend around the lower edge thereof a rim of india-rubber or of any of its elastic compounds for the purpose of preventing them from being broken if too carelessly or heavily placed upon the table, etc., as well as also to prevent them from scratching, marring or in any other manner defacing the surface of the same.]

48,997.—Ox Yoke.—Wm. Perrin, Andover, Mass.:

I claim an adjustable ring carrier applied to an ox yoke when the said ring carrier is adjusted by means of a screw or screws, arranged substantially as herein specified and for the purpose set forth.

48,998.—Forge Tweer.—Ralph Platt, Florence, Ind.:

I claim so constructing the tweer that the longitudtnal axis of the elongated orifice may be rotated in either direction as and for the purpose specified.

48,999.—Ore Crusher.—J. V. Pomeroy, Utica, N. Y.:

I claim, First, The hopper, G, perforated circumferentially or on its sides and applied to an ore crusher for the purpose of separating the finer quartz from the coarser, during the crushing process, substantially as herein described.

Second, The jacket, H, in combination with the screen, J, and crusher, D C, substantially as and for the purpose described.

Third, The combination of the diffusing screen J, and crusher, C D, substantially as and for the purpose described.

Fourth, Screening pulverized ore upon two or more surfaces, one of which concentrates while the other diffuses the ore during the crushing process, substantially as herein described.

49,000.—Guide to Key-holes.—W. R. Pomeroy, Millersburg, Ohio:

I claim the flange, F, or other similar device when arranged and applied in the manner and for the purpose described.

49,001.—Cooking Range.—Moses Pond, Boston, Mass.:

I claim the combination and arrangement of the flues and connecting passages thereof about each of the ovens the same consisting of the flue, G, the passage, g, the flues, H H, the passages, h h, the flue, I, the diving flue, K, and the passage, i, the whole being to cause the smoke and heat to pass in contact with the oven in the manner as described.

Second, I also claim the improved arrangement of each of the steam escape openings, b, and its discharge flue, o, with the boiler chamber, F, and the oven and its flues.

Third, I also claim the damper, q, adjustable on its rod, substantially as described, in combination with the shoulder, y, or its equivalent, on such rod, the whole being arranged so as to operate in manner and for the purpose as specified.

Fourth, I also claim the arrangement of the closets, D D, the fireplace, the flue, C, the flue, X, the ovens, E E, and the recess or chamber, F.

Fifth, I also claim the arrangement of the movable mantel, v, with the ovens, E E, and the boiler chamber, F, the same being as and for the purpose set forth.

Sixth, I also claim the above described mode of making each of the extensions, w2, of the side plates, w w, of the boiler chamber, viz., in sections or parts, a2 a2, hinged together and hinged to the front part of the range, for the purpose described.

49,001.—Manufacture of Friction Matches.—Van Rensselaer Powell, Troy, N. Y.:

I claim the manner of "coating" and "capping" friction matches with the ignitible compound while said matches are still in the form of "strips," substantially in the manner herein described, whereby a material saving in the quantity required of said compound is effected, as set forth.

I also claim the manner of separating said match strips from each other, and dividing the same into loose matches, by the means substantially as herein specified, whereby a saving in labor is gained.

And, lastly, I claim the combined use of the within described improved modes of manufacturing friction matches, as constituting an improved manner of manufacturing the same, substantially as herein described.

49,003.—Sheep Rack.—A. D. Stansbury, Cross Creek Township, West Va.:

I claim, First, A combined sheep rack and trough, so constructed and arranged that its racks can be thrown down, as represented in Fig. 4, and also raised and brought together and fastened, as represented in Fig. 3, substantially as and for the purpose set forth.

Second, So constructing and pivoting the bottom of a combined sheep rack and trough that it will open and close, substantially as described.

Third, The combination of the hinged racks, which adjoin when closed, with the fastening boards, D, substantially as described.

49,004.—Running Gear of Railroad Cars.—John Stephenson, New York City:

I claim, First, The longitudinal stays or connecting rods, B, when attached to the upper sides or above the feet of the pedestals, and secured in position by the pintle bolts, a, substantially as and for the purpose set forth.

Second, The diagonal stays, C, applied or attached to the pedestal and the frame work of the truck or car, substantially as and for the purpose specified.

Third, The combination of the longitudinal stays or connecting rods, B, and diagonal stays, C applied in the manner substantially as and for the purpose set forth.

49,005.—Axle Box.—John Stephenson, New York City:

I claim, First, The combination of the yielding or self-adjusting collar, B, with the chamber, A, at the rear of the axle box and the axle, C, the collar being fitted on and controlled by the axle, and all arranged substantially as and for the purpose set forth.

Second, The method of confining the bearing in the box in order to provide for the facility of its extraction, as set forth.

49,006.—Unloading Attachment for Wagons.—James H. Stevens, East Durham, N. Y.:

I claim, First, The rails, j* j*, either with or without a bottom, i*, for the body, A, for the purpose of serving as a support for the apron, B, and still admit of a free movement of the latter, substantially as and for the purpose specified.

Second, The flexible apron, B, in combination with the two shafts, C D, all arranged and applied to the wagon body, to operate substantially as and for the purpose set forth.

Third, The rollers, I J, arranged in relation with the flexible apron, B, and used in connection with the shafts, C D, for the purpose specified.

Fourth, The supplemental roller, K, either with or without the straps, L L, arranged substantially as and for the purpose set forth.

[This invention relates to a new and improved unloading attachment for wagons. The object of the invention is to obtain a device for the purpose specified which will admit of being applied to any ordinary wagon body in use, capable of being constructed at a very moderate expense, and operated with the greatest facility.]

49,007.—Clothes Bracket.—James Stimpson, Baldwinsville, Mass.:

I claim the folding and removable frame, B c, supported by lugs, g g, from the brackets, A A, as and for the purpose described.

[This invention consists in a suitable bracket to be attached to the side of a room, or in any other proper place, having folding or swinging arms connected together by cross rods, which form a frame on which to hang the clothes, the said frame being provided with a series of rods suitably connected together and attached to the bracket, whereby the surface on which to hang the clothes or other articles is considerably increased.]

49,008.—Cultivator.—Garland B. St. John, Kalamazoo, Mich:

I claim the two plow beams, A A, connected together as shown, in connection with the handles, G G, pivoted to the beams, and having the wheels, I, attached to them, and the segment racks, J, and catches, K, all arranged substantially as and for the purpose herein set forth.

[This invention consists in combining and arranging two plow beams with wheels and levers, arranged in such a manner as to operate very efficiently.]

49,009.—Crucible for Metallic Baths.—Benj. S. Stokes, Manchester, N. H.:

I claim the construction, substantially as herein described, of a crucible of two parts, a and b, with space, c, between a and b, filled with sand, or its equivalent, for the uses and purposes herein set forth.

49,010.—Gas Burner Chimney.—James Stratton, Brooklyn, N. Y.:

I claim a glass chimney for gas burners composed of an upper part, f, of oval or elliptical form in its transverse or horizontal section, and of equal diameter throughout, and a lower conical or flaring part, g, also of oval or elliptical form in its transverse section, and applied to the burner so as to have a relative position with the flame or jet, substantially as and for the purpose specified.

[This invention consists in having a glass chimney constructed or made in such a form and applied to the burner in such a manner as to cause the flame or jet to burn steadily, or without that flickering which invariably attends the flat flames or jets produced by the ordinary "bat-wing" or "fish-tail" burners, and which is very detrimental to the eyes.]

49,011.—Board Measure.—G. S. Tiffany, Palmyra, Mich.:

I claim, First, Making one or more series of perforations in concentric circles in the transverse wheel, c, each of which acts in the capacity of a bevel wheel, or placing a wheel upon the same shaft equivalent to said perforations, in combination with the pinion, F, screw, D, index and scale, when the same are arranged to operate substantially as and for the purpose herein set forth.

Second, The combination of thumb-piece, L, strap, n, nut, m, and

point, o, when the same are arranged to operate as and for the purpose herein specified.

49,012.—Manufacture of Sugar from Corn.—Henry A. Tilden, New Lebanon, N. Y.:

I claim treating the entire grain of maize and other cereals so as to produce sirup, substantially as herein described.

49,013.—Filter.—H. A. Tilden, New Lebanon, N. Y.:

First, I claim a series of filtering vessels, each formed substantially as specified, and connected from the upper part of one to the lower part of the next, for effecting successive filtrations or displacements, as set forth.

Second, I claim a series of filtering vessels, in which the adjacent vessels are connected, in the manner specified, so that one of them can be excluded from the filtering operation, for the purposes specified.

49,014.—Mode of Sharpening Saws.—J. F. Tudor, Philadelphia, Pa.:

I claim the combination of the devices, constructed and arranged substantially as herein described, for sharpening the teeth of saws.

49,015.—Medicine for Horse.—Vivian Vance, Havana, N. Y.:

I claim the above-described remedy, prepared and compounded in the manner and for the purpose substantially as described.

49,016.—Gage Cock, Etc.—E. A. Walker, Nashville, Tenn.:

I claim the conical valve, D, constructed and operating substantially as herein specified.

49,017.—Staging for Building Purposes.—E. D. Walker, Millbury, Mass.:

I claim the mode of construction of the staging with its straddle pieces, brackets, standards, etc., as within described.

49,018.—Machine for Cutting Paper.—Chas. Wells and Henry Barth, Cincinnati, Ohio:

I claim giving an oscillating motion to the knife, C, during the process of cutting, by bringing its ends down one end at a time, alternately, whether the same is combined with the sliding motion as given by the link or not, or whether the motion is given by cams or any other equivalent means, substantially as herein described, so that the knife descends one end at a time in the direction of its cutting edge, for the purpose set forth.

[An engraving and description of this invention was published on page 367, Vol. XII., SCIENTIFIC AMERICAN.]

49,019.—Batter Cup or Dish.—Benj. Wieland, Orangeville, N. Y.:

I claim the arrangement, in connection with the cup or vessel, A, having an inclined bottom, a, of the spout, B, valve, C, spring, E, lever, F, and rod, H, constructed and operated substantially in the manner and for the purposes herein specified.

[This invention consists in providing a cup or dish with a valve, having a spring connected with it, and also a rod and lever, whereby the contents of the cup or dish may be allowed to discharge itself at the will of the operator or holder of the cup or dish, and without admitting of any waste or dripping of the contents. The invention is more especially designed for putting batter on griddles in baking cakes, but is applicable to other purposes, such as molasses cups, beer mugs, etc.]

49,020.—Method of Separating the Products of Distillation of Hydro-carbon Oils and other substances.—L. N. Wilcox, Pittsburgh, Pa.:

I claim separating benzole from illuminating oils in distilling hydro carbon oils and other substances, by means of separate pipes, D, arranged with traps, C, leading off from different parts of the condenser, substantially as and for the purpose above described.

49,021.—Hay-spreading Machine.—Charles Willard, Newtown, Pa.:

I claim the application to the cranks, F, of the springs, I, and slides, C, fitted in slots or openings, b, in the forkbars, D, to operate in the manner substantially as and for the purpose set forth.

[This invention relates to a new and improved machine for spreading or loading hay, and it consists in a novel connection of the cranks of the machine to the fork bars of the same, whereby the forks are allowed to come in contact with obstructions, and pass over the same without being liable to be broken or injured.]

49,022.—Railway Journal Box.—R. C. Wright, Meadville, Pa.:

I claim, First, The application to railway axle journal boxes of a cover or cap, arranged with a spring, in the manner shown, or in any equivalent way, to operate as set forth.

Second, The opening, b, in the upper part of the cover or cap, A, the rod or belt, B, and the spring, C, arranged substantially as and for the purpose specified.

Third, The lip, a, having an inclined inner surface, in combination with the lower beveled surface, a*, of the cover or cap, A, and a spring, C, for the purpose specified.

[The nature of this invention consists in providing the opening at the outer end of a railway-axle journal box with a cover or cap, that may be readily opened for the purpose of inspecting the contents of the box, and adjusting and removing the same, and at the same time preventing the admission of dust, dirt, and other foreign substances into the box.]

49,023.—Sewing Machine.—Jacob Zuckerman, New York City:

I claim, First, The oscillating shoe, m, applied in combination with the bobbin holder, m', bobbin, q, and an eye-pointed needle, n, substantially as and for the purpose set forth.

Second, The use of a spring bearing, r', in combination with the oscillating shoe, m, bobbin holder, m', and bobbin, q, constructed and operating substantially as and for the purpose described.

Third, The reciprocating slide, u, in combination with the cam, t, and spring, v, substantially as herein described, for the purpose of switching off the old loop before the next succeeding descent of the needle.

49,024.—Harvesting Machine.—Wm. F. Cochrane (assignor to himself, B. H. Warder, and J. C. Child), Springfield, Ohio:

I claim, First, Folding the cutting apparatus upon the main frame, and between the driving wheels, by the use of a single joint, substantially as described.

Second, Connecting the finger beam and main frame by an extension bar bent at an acute angle and journalled in the frame, substantially in the manner described, for the purposes set forth.

Third, The combination of the main frame and cutting apparatus with oblique gearing and a single joint, substantially as described, for the purpose of folding the cutting apparatus on the frame between the driving wheels without deranging the gearing.

Fourth, The combination of the inverted bevel gear, D, with the counter shaft, when arranged and operating as described.

Fifth, The combination of the counter shaft and crank shaft, when arranged and operating as described.

Sixth, The combination of the extension arm brace, K, and countershaft, when arranged and operating as described.

49,025.—Wringing Machine.—John O. Couch, Middletown, Conn., assignor to Metropolitan Washing Machine Company, Middlefield, Conn.:

First, I claim the combination of the single bell-cranked piece, X, carrying rigid studs, x y, with the single straight link, Y, and with the supporting arm, A2, arranged on a clothes-wringing machine, so as to secure firmness and economy, substantially in the manner herein set forth.

Second, I claim the arrangement of the pinching nut, F, stationary screw, f, within the framing, A, of a wringing machine, substantially as and for the purposes herein set forth.

Third, I claim the rack, I, and pinion, H, in combination with the duplex lever or bail, J, and suitable confining means, K A', substantially as and for the purposes herein set forth.

Fourth, I claim, in combination with a roller wringer, the use of the bent wire or rod, M, so mounted and arranged as to perform the double function of a guide and a clearer, substantially as herein set forth.

Fifth, I claim, in combination with a clothes wringer, the adjustable castings, G g, carrying the slides, I I, to pinch the tub or vessel, and adapted to be twined and set in various positions, substantially as and for the purpose herein set forth.

Sixth, I claim the soft-bearing pieces, Q, in combination with the slides, I, and the adjustable castings, G g, of a clothes-wringing machine, substantially as herein set forth.

49,026.—Apparatus for Discharging the Cargo of a Sunken Vessel.—Peter E. Falcon, Cohasset, Mass., assignor to himself and Geo. W. Fuller, Chelsea, Mass.:

I claim the combination and arrangement of the ropes, s h and m, with the tub, b, the eye, o, and blocks, r and l, or their equivalents, the whole being applied to a submerged vessel and a lighter or its equivalent as explained so as to enable the tub to be drawn through the hold of the vessel and out of the same and to the surface of the water and afterward be drawn back again into the hole and through the same, substantially as specified.

And I also claim the combination of one or more bars, p q, with the said ropes, h and m, the tub, K, the eye, o, and the back draft rope, s, such bar or bars being applied to the submerged vessel in manner and to support the eye, of one or more blocks, substantially as specified.

And I also claim the tub made and provided with the guide rods, x x, as represented in Fig. 2, and as above described,

49,027.—Shirt Bosom.—E. F. French (assignor to himself and E. C. Terrill) New York City:

I claim an "open front" shirt bosom secured together by means of one or more pockets formed along and upon the inner edge of one of the parts, and a corresponding number of interlocking lapets or flap pieces of suitable length and width on the other and overlapping part, substantially in the manner described and for the purpose specified.

[This invention relates to the mode of securing shirt bosom fronts together when worn, and consists in so forming its two flaps or sides that they can be fastened together without the use of studs, buttons, or other devices hitherto generally employed therefor, the advantages of which are manifest.]

49,028.—Horse Shoe.—John Haseltine (assignor to himself and James M. Williams) Warren, N. H.:

I claim the employment or use of india-rubber, either pure or combined with other substances, fitted between the shoe and the hoof or foot of the animal and provided with a ridge or roll at its inner edge or arranged in any equivalent way for the purpose of preventing the admission of snow between the shoe and hoof and at the same time preventing jars or concussions being transmitted to the hoof or foot, substantially as set forth.

[This invention consists in applying shoes to the hoofs or feet of horses with india-rubber, either pure or combined with other substances, interposed between the shoe and the hoof or foot in such a manner that the hoof or foot is relieved from all jars or concussions and the feet prevented from "balling" with snow in winter."]

49,029.—Heat Controller Attachment.—Marcus F. Hitchcock (assignor to himself and James M. Ross) Springfield, Mass. Antedated July 19, 1865:

I claim the combination and arrangement of the drum, A, and pipes, D E and F, and damper, H, as applied in the manner and for the purposes substantially as herein described.

48,030.—Roller for Clothes Wringers.—John F. Holt, Providence, R. I., assignor to Woonsocket Rubber Co.:

I claim, First, The spiral grooved mandrel, constructed substantially as described, for the purpose specified.

Second, The binding of the preliminary sheet or thickness of vulcanizable material on the mandrel, substantially in the manner and for the purpose described.

Third, I claim an elastic roll, for the purpose specified, constructed substantially in the manner described.

49,031.—Cloth Guide for Sewing Machines.—Arthur Huston, Bristol, Me., assignor to Shaw & Clark, Biddeford, Me.:

First, I claim a sewing machine gage in which the pad or upper plate, B, is arranged and used substantially in the manner and for the purposes shown and specified.

Second, I claim constructing the pad, B, substantially in the form described and shown in Fig. 1, for the purposes specified, when such pad is arranged and used in the manner herein set forth.

49,032.—Ore Crusher.—Simon Ingersoll (assignor to himself and George H. Keith), Stamford, Conn.:

In combination with the movable jaw, d, I claim the cam, h2, and the hangers, h' h', whereby the said jaw is made to operate in the manner herein specified.

[This invention relates to an arrangement of the movable jaw of ore-crushing machines, whereby not only can a strong and powerful crushing pressure be brought to bear against the ore in the machine, but there is no possibility of the ore being blocked therein, the advantage and importance of which are manifest.]

49,033.—Steam Pressure Gage.—James D. Ingram, New York City, assignor to George M. Rice, George S. Barton and James A. Fales, Worcester, Mass.:

I claim the combination of the hollow cylindrical or other suitable shaped plug, o, with its guiding tube, f, arranged together and having steam inlet and outlet ports, substantially as and for the purposes described.

49,034.—Rock Drill.—Charles W. Johnson, Waterbury, Conn., assignor to Hiram Dailey and S. Atwater:

In combination with the drill, B, I claim the enlargement, C, extending eccentrically from the drill and shaft, and carrying one or more cutters.

In combination with the enlargement, C, extending eccentrically from the drill shaft, I also claim beveling or slanting up the top of the enlargement, C, so that it will enter the lower end of the tube freely.

49,035.—Wood-turning Lathe.—Harvey Locke (assignor to John J. McNutt), Boston, Mass.:

I claim, First, The combination of the stationary bevel gear, W, rotating pinion, X, hollow spindle, V, pinions, Z and A', links, C' C', and feed wheels, D' D', substantially as and for the purpose described.

Second, The adjustable clamp, K', and spring clamp, E', substantially as set forth, and for the purpose described.

Third, The adjustable clamps, M' and N', arranged substantially as and for the purpose described.

Fourth, So arranging the feed rolls, D' D', as to bear on each side of the corner of the square stock to be cut, substantially as and for the purpose described.

Fifth, Confining the cutters, d, to the wheels, O, by means of a dovetail and a clamp and screw inside of the circle described by the edge of the cutters, substantially as described.

49,036.—Binder Guide for Sewing Machines.—Clark Marsh (assignor to The Wheeler & Wilson Manufacturing Company), Bridgeport, Conn.:

I claim, First, The combination in a binder guide of the following instrumentalities, viz., the stock, tongue and guide, substantially as set forth.

Second, The combination in a binder guide of the following instrumentalities, viz., the stock, tongue, guide and adjusting screw, to vary the relative positions of the tongue and lips of the guide, to admit binding of various widths, substantially as set forth.

Third, The combination in a binder guide of the following instrumentalities, viz., the stock, tongue, guide and adjusting screw, to vary the relative positions of the tongue and guiding lips in the vicinity of the point where the sewing is effected, substantially as set forth.

Fourth, The combination in a binder guide of the following instrumentalities, viz., the stock, tongue, guide and lip, to flatten the folded binding, substantially as set forth.

46,037.—Carpenter's Rule.—Benjamin G. Martin, Philadelphia, Pa., assignor to himself, Thomas M. Davis, Lloyd H. Walton and Watson Sanford:

I claim, First, The swinging arm, C, in combination with a pocket rule, A B, the same being arranged to operate together substantially as described, for the purposes specified.

Second, I also claim the index, D, and pointer, d', in combination with a pocket rule, A B, the same being arranged to operate together substantially as described, for the purposes specified.

49,038.—Artificial Leg.—Joshua Monroe (assignor to himself and Jetur Gardiner), New York City:

I claim, First, The double butt hinge, D, in combination with the blocks, E F, having planes, a a' b b', and with the two parts of an artificial leg above and below the knee joint, constructed and operating substantially as and for the purpose set forth.

Second, The tendon, I, composed of two parts, i j, which are connected to each other by a loop, k, and to the various parts of the artificial leg, viz., the heel, the block, E, below and the block, F, above the knee joint, substantially in the manner and for the purpose described.

49,039.—Shirt Collar and Bosom.—Celius E. Richards, North Attleboro, Mass., assignor to Vernon A. Messenger, Boston, Mass., and Virgin J. Messenger, Canton, Mass.:

I claim the construction of the collar, viz., its inner fold, a, of a less width than that of the outer fold, b, and with a back button trole fly, c, to extend, from such fold, a, as specified.

I also claim the construction of the bosom, viz., with the wings, d d, separated from the collar by the spaces, c c, and to extend from the bosom and go underneath the collar while in use, the whole being substantially as specified.

49,040.—Manufacture of Tin-lined Lead Pipe.—W. A. Shaw (assignor to himself, Gardner Willard, Lewis Colwell and Joseph Colwell), New York City:

I claim the method herein specified of chilling the cast metal in the cylinder of a hydraulic pipe press, by a core, cooled as set forth, immediately before it is employed in said cylinder, as specified.

49,041.—Furnace Door.—N. L. Sibley, Weston, Mass., and Benj. Shiverick, Waltham, Mass. Antedated June 7, 1865:

We claim the application of one, two or more plates of metal or other material, arranged so far from the door and from each other by suitable means as to form proper and sufficient space for the free circulation of air between the door and the plate, and between the several plates, substantially as described, for the purpose set forth.

We also claim connecting the applied plates to the door by means of bolts, studs or flanges, either with or without the use of the strips of soapstone fire-brick, plaster or other slow conductors of heat.

We claim a door provided with an air space between the door and the water box, arranged outside of the door, substantially as described.

49,042.—Machine for Grinding Files.—I. H. Spencer (assignor to himself and Andrew R. Slade), Pawtucket, R. I.:

I claim, First, The within-described method of grinding files, by placing them on a carriage moving on a curved bed, and exposing them to the action of one or more cutters, substantially in the manner and for the purpose herein set forth.

Second, The sliding clamp, F, in combination with a toothed segment, m, hand lever, H, and hinged dog, p, constructed and operating substantially as and for the purpose described.

Third, The combination of the cutters, I J, with the carriage, B, and curved bed, A, constructed and operating as and for the purpose specified.

49,043.—Wringing Machine.—James N. Pease, Panama, N. Y., assignor to the Metropolitan Washing Machine Co., Middlefield, Conn.:

First, I claim the cranks, B' C', and B2 C2, and rods, D' E', and D2 F2, with suitable guides for the reciprocating ends of the connections, all arranged for joint operation, so as to transmit the motion of one roll to the other, substantially as and for the purposes herein specified.

Second, I claim the gear, K, and rack, L, or their equivalents, in combination with the hand lever, M*, and with the movable roll, C, adapted to be operated by the weight of itself and of the hand, substantially as herein specified.

Third, I claim the hand lever, M*, operating to depress one end of the lever, I, in combination with the adjusting screw nut, j, or its equivalent, adapted to press upon and form a movable fulcrum at the opposite end, substantially as herein specified.

Fourth, I claim the sliding and swinging shield piece, P, mounted and arranged substantially as and for the purpose herein set forth.

49,044.—Apparatus for Feeding Thrashing Machine.—Elijah Valentine and Moses T. Ridout (assignors to themselves and Wm. Beck), Milwaukee, Wis.:

We claim combining with each other and with a hopper, S, and feeding box, H, attached to a thrashing machine, suitable revolving knives, e e, for cutting the bands, confining sheaves of grain, and revolving beaters or paddles, k k and m, to sift and spread out the same when said knives and beaters are secured to and operate upon separate shafts, substantially in the manner herein set forth.

49,045.—Machine for Making Metallic Tubes or Spouts.—Elijah Valentine and Moses T. Ridout (assignors to themselves and Wm. Beck), Milwaukee, Wis.:

We claim the use and arrangement of two or more stationary rollers, E E, in combination with a detachable forming roller, F, partially inclosed thereby, when all of said rollers have a tapering form and are made to revolve in unison with each other, substantially in the manner and for the purpose herein set forth.

In combination with a detachable forming roller or mandrel, F, and stationary auxiliary rollers, E E', we claim the pressure arms, M and N, arranged and operating substantially as and for the purpose herein set forth.

We claim, also, the spring-actuated rod, G, so combined with the supporting block, D, and the pressure arm, N, as to form an adjustable journal box for the free end of the detachable mandrel, F, substantially in the manner herein set forth.

49,046.—Press.—T. B. Webster (assignor to himself and Thomas Gannon), New York City:

I claim, First, The arrangement of the eccentrics, N N', on the driving shafts, P, in combination with the lever pawls, t t', ratchet wheels, r r', and with the chains, wheels and chains, or their equivalents, constructed and operating substantially as and for the purpose set forth.

Second, Placing the two sets of eccentrics, N N', at the opposite ends of the shaft, P, at right angles to each other, substantially as described, so as to impart to the follower an alternate rising motion.

Third, The hand wheels, H, applied in combination with the axles, p, ratchet wheels, r r', and chain wheels, n, substantially as and for the purpose specified.

49,047.—Screw Press.—Thomas B. Webster (assignor to himself and Thomas Gannon) New York City:

First, I claim a press provided with a right and left hand screw spindle, E, I claim the gear wheels, F G, and cranks, I I, or their equivalents in combination with heads, e, detachable nuts, J J, toggle arms, K K, and followers, C C, situated on opposite sides of the spindle, all as herein shown and described.

Second, Making the boxes which form the bearings for the screw spindle and for the driving shafts yielding, substantially as and for the purpose set forth.

Third, The eccentric shafts, d d, geared together by cog wheels, f f, and operated by a hand wheel, g, or its equivalent, in combination with the jaws, b b, spindle, E, and followers, C C, constructed and operating substantially as and for the purpose specified.

49,048.—Machine for Pressing Hats and Bonnets.—Hiram E. West, Attleborough, Mass., assignor to Oliver Carpenter & Co., New York City:

I claim drawing the block, C, and mould, B, together by means of levers substantially as described.

49,049.—Apparatus for Embossing Bonnets and Hats.—Hiram E. West, Attleborough, Mass., assignor to Erastus P. Carpenter, Foxborough, Mass.:

I claim as an improvement in the manufacture of bonnets, hats, caps, etc., the removable die for embossing, substantially as set forth.

49,050.—Manufacture of Steel.—Solon W. Young (assignor to himself and Charles T. Place) Providence, R. I.:

I claim the within described process for manufacturing steel composed of three manipulations, substantially as set forth.

[This invention relates to a process which is divided in three differ

ent manipulations whereby steel can be made by mixing cast iron and wrought iron together.]

49,051.—Manufacture of Iron and Steel.—Henry Bessemer, London. England. Patented in England March, 15, 1856:

I claim, First, Forcing currents of air or steam through and in contact with molten iron, without the use of tuggers or nozzles, substantially in the manner shown.

Second, A converting vessel divided into two chambers so that air or steam forced upon the surface of the metal in one chamber may pass into the metal in the other chamber under or through the partition between the two chambers.

Third, The projections, N and P, either separately or in combination, in chambers or vessels for converting molten iron for the purpose of more thoroughly diffusing the currents of air or steam through said molten iron.

Fourth, The perforated screen, K, either by itself or in combination with either or both of the projections, N and P, in chambers or vessels for converting molten iron, for the purpose of more thoroughly diffusing the currents of air or steam through said molten iron.

Fifth, A mold, provided with a runner or runners, lined with loam or other suitable non-conducting material, substantially as and for the purposes described.

Sixth, A mold from which the atmosphere may be exhausted or partially exhausted, substantially as and for the purpose set forth.

49,052.—Manufacture of Iron and Steel.—Henry Bessemer, London, Eng. Patented in England May 31, 1856:

I claim, First, The use of the double chambers, substantially as described, for treating iron or alloys or fluxes, for the purposes specified.

Second, Heating or melting pig iron or other metals in a reverberatory furnace, or other suitable vessel, by the heat given off when streams or jets of air or steam are forced through fluid crude iron in the process of converting such fluid crude iron into malleable iron or steel, substantially as described.

Third. Alloying iron or steel with other metals by mixing such other metals with the iron or steel during the process of converting said iron or steel from crude iron by currents of air or steam.

Fourth, Blowing powdered metals or oxides of metals or alloys or fluxes into molten iron by means of the currents of air or steam used to decarbonize the said molten iron, substantially in the manner described.

49,053.—Manufacture of Iron and Steel.—Henry Bessemer, London, Eng. Patented in England Jan. 21, 1865:

I claim, First. Rolling sheets, plates, bars and other forms from fluid malleable iron or steel, by running or pouring said fluid metal between the rolls, substantially as described.

Second, The blocks, f, and springs, g, for the purpose of removing water from the surface of the rolls.

Third, The scrapers, w, for the purpose of removing the plate or bar of rolled metal from the rolls in case of adhesion thereto.

Fourth, Holding the rolls in close contact with each other previous to pouring in the molten metal, substantially as and for the purposes described.

Fifth, Rolling fluid metal by means of rolls, cooled by passing water through suitable passages formed in the said rolls, substantially as described.

49,054.—Power of Manufacturing Axles, etc., from Iron or Steel.—Henry Bessemer, London, England. Patented in England March 16, 1859:

I claim, first, The manufacture of locomotive and other crank axles, from a plain slab or rolled or hammered ingot of cast malleable iron, cast steel, or cast semi steel, by sawing or otherwise cutting away such parts of the mass as will leave a piece of metal having the general form or configuration of the intended crank axle.

Second. I claim, in the manufacture of locomotive and other crank axles made of cast malleable iron or cast steel, or cast semi-steel, the twisting of the axles so as to alter the angle of the different throws from the common plane in which they are formed into any desired angle or relative position to each other.

49,055.—Machinery for the Manufacture of Iron and Steel.—Henry Bessemer, London, England. Patented in England, March 1, 1860:

I claim, first, A converting vessel capable of rotary motion upon its own axis, in combination with a rack and pinion or any equivalent mechanism operated by hydrostatic pressure in a cylinder for the purpose of giving to such a vessel a rotary or semi-rotary movement.

Second, A converting vessel combined with a tweer box so constructed as to constitute a chamber for receiving air for decarbonizing crude liquid metals and distributing such air to the tweers.

Third, A tweer box so constructed as to constitute a chamber for receiving air for decarbonizing crude liquid metal and distributing such air to the tweers whon the bottom of said tweer box is made of a piece or pieces suitable to be easily removed, as and for the purposes set forth.

Fourth, The combination of the ladle with the crane arm, or its equivalent, so that the ladle shall be held in a fixed position relatively to the crane arm, but shall be capable of being tipped when desired, substantially as and for the purposes specified.

Fifth, The combination of a ladle capable of being held in a fixed position relatively to the crane arm or its equivalent, substantially as described, with any suitable means of lowering the ladle, as and for the purposes specified.

Sixth, The employment, in the manufacture of malleable iron or steel, of casting ladles, having two or more valvular openings in their bottoms.

Seventh, The method of filling several molds at one time from a basin or vessel having several outlets such basin or vessel being supplied with fluid malleable iron or steel during such casting process, substantially as described.

Eighth, The method herein described of forming tweers by pressure from dry or nearly dry materials.

49,056.—Apparatus for Receiving and Delivering Mail Bags to and from Railroad Trains and Stations.—Andre Chavaune, Paris, France:

First, I claim the open case, A, applied to a railroad car and operating in combination with the trident, g i, secured to a post or other stationary part in a station, substantially as and for the purpose set forth.

Second, The movable screen, e, in the interior of the open case, A, to operate in combination with the mail bag or package, C, substantially as and for the purpose described.

[The object of this invention is an apparatus by means of which a mail bag or other package carried on a railroad train, can be deposited at any station, and, at the same time, a bag or package from the station delivered to the train while moving at full speed.]

49,057.—Breech-loading Fire-arm.—M. L. M. Descontures, Paris, France:

First, I claim the employment in or application to fire-arms of an oscillating breech, operating substantially as hereinbefore described.

Second, The application of the oscillating breech described to double-barreled fire-arms, in such manner that either one of the two cocks or hammers may act either on the needle striker or exploding rod of its own barrel or on that of the other barrel, so that the arm may be discharged with one barrel charged and the other barrel open, as well as when both are charged.

Third, The arrangement relatively to each other and method of fitting together the barrel, breech and butt, whereby simplicity of construction is combined with strength, durability and perfect security.

49,058.—Machinery for Hammering Metals.—John Ramsbottom, Cleeve, England:

First, I claim the improvements in and applicable to duplex or compound steam hammer, as described and shown in sheets 1, 2 and 3 of the accompanying drawings.

Second, I claim supporting the hammer blocks on sectors, as shown and described in reference to fig. 9*.

Third, The improved apparatus described and shown in sheets 4 and 5, for supporting and holding ingots and other pieces of metal during the operation of hammering.

And, lastly, The apparatus described in reference to fig. 23, for traversing the track with the ingot or other articles to and fro during the operation of hammering.

49,059.—Weighing Attachment for Pen Holders or Pencils.—D. A.B. Savy, Paris, France, assignor to E. T. Vanderbergh, Toulon, France:

I claim a weighing attachment, constructed substantially as described, and applied to a pen holder or pencil, for the purposes set forth.

[This invention consists in the application to a pen holder or pencil, of a clasp capable of holding a letter or other article to be weighed in combination with one or more notches cut or otherwise produced in the surface of the holder or of the pencil, in such a position and in such a manner that, by placing the pencil or pen holder on the edge of a knife or other simular implement, the weight of a letter or other article secured in the clasp can be readily determined in an expeditious and easy manner.]

48,060.—Boring Machine.—John Vandyke, Grimsby, Canada West:

I claim the combination of the movable frame, B, which carries the shaft or stock of a boring tool with a fixed frame, B', on which it works up and down by means of elevating screws, H H, substantially as and for the purpose above described.

Second, I also claim the combination of the elevating screws and the adjusting screws, J K K, with the movable frame. B, substantially as and for the purpose above described.

Third, I also claim the feeding slide, I, in combination with the shaft, C, of the boring tool, and the slide bar, O, of the movable frame, for the purpose of feeding the tool to the work, substantially as above described.

This machine is intended for boring wood, and is especially adapted for use in making carriage wheels with either screw or hollow augers, saving much labor and making what was formerly the most difficult part of wheel-making, when carried on by hand, to be now accomplished with ease and in a comparatively perfect manner.]

RATES OF ADVERTISING.

TWENTY-FIVE CENTS per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published we will explain that eight words average one line. Engravings will not be admitted into our advertising columns, and, as heretofore, the publishers reserve to themselves the right to reject any advertisement they may deem objectionable

VEREIN DEUTSCHER TECHNIKER, VON NEW York. Unter diesem Namen wurde vor einigen Wochen ein Verein gegründet, um die hiesigen deutschen technischen und wissenschaftlichen Kräfte zu vereinigen und durch gemeinsame Thätigkeit dem deutschen Talente und Gewerbefleiss die ihnen gebührende Anerkennung zu verschaffen, sowie durch Besprechung und Lösung technischer und wissenschaftlicher Fragen zur Belehrung für die einzelnen Mitglieder sowohl als für die Aussenwelt zu wirken. Der Verein versammelt sich jeden Freitag Abend, um 8 Uhr im Lokal, des Herrn Sieberg, No. 4 St. Mark's Place, und sind alle Techniker sowie auch Fabrikanten eingeladen, zu erscheinen.
O. FUCHS, President.
F ROCHOW, Secretary. 6 3

DYNAMOMETERS OF ANY REQUIRED POWER, indicating from 5 pounds to 500 pounds, or from 25 pounds to 1,600, may be found at FAIRBANK'S & CO.'S SCALE WAREHOUSE, No. 252 Broadway, N. Y. 6 10*

R. BALL & CO., MANUFACTURERS OF ALL KINDS of Wood-working Machinery—Planers, Sash Molding and Tenoning Machines, Power and Foot-mortising Machines, Scroll Saws, Saw Arbors, Pulleys, Etc. All from the latest improved patterns. For particulars see our illustrated catalogue. R. BALL & CO., Worcester, Mass. 6 10*

DEALERS IN LARGE OR SMALL LABOR-SAVING Machines, as Mills of all sorts, Grain Cleaners, Farm Tools, Engines, Etc., suitable for Liberia, Africa, will please address, with circular and price, P. BARNES, JR., 1* Portland, Maine.

WE HAVE SPENT MUCH TIME AND MONEY TO produce the best Engine Lathes in the world. We invite purchasers to call on us before buying. We always have planer centers on hand. THOMAS & CO., 6 4* Cypress street, Worcester, Mass.

TO MACHINISTS OR OTHERS.—THE UNDERSIGNED being at present unable to give proper attention to the manufacture of his well-known Paint Mills, will sell the business on favorable terms. The reputation of the mills is thoroughly established, and some two thousand of them are now in use in the Eastern States and Provinces. A. H. BRAINARD, 1* No. 57 Haverhill street, Boston.

A VALUABLE PATENT FOR SALE.—ADDRESS S. M. GOFF, East Addison, Addison Co., Vt. 6 9*

WINANS' ANTI-INCRUSTATION POWDER.—TEN years a standard and reliable article for preventing scale. Beware of frauds and imitations. H. N. WINANS, N. Y. 6 4*

PLATINA PLATE AND WIRE, IMPORTED AND for sale by SAML. S. WHITE, 4 2* No. 658 Broadway.

LOOMS.—SIX TAPE LOOMS, WITH EVERY APPENDAGE. Also, 150 Braiding Machines and Fixtures for sale by W. BARNES, Bristol, Conn. 1*

SNOW'S PATENT SAFETY GOVERNOR AND VALVE COMBINED. Patented Oct. 11, 1859. Reissued May 13, 1862. Manufactured only by the undersigned. The Executors of the Estate of Joseph Hall, deceased, would announce that they will continue the manufacture of Snow's Patent Safety Governor and Valve Combined, and will be prepared with increased facilities to fill orders promptly. This is the only Governor in market capable of shutting off the steam and stopping the engine in case of accident, such as breaking the crank or shaft or parting of the belt. We also manufacture Governor's for Portable Engines, which, in point of efficiency cannot be excelled. Circulars and Price Lists furnished on application. Address all orders as below. F. W. GLEN, M. E. HOLTON, Executors of Estate of Joseph Hall, deceased. Pochester, N. Y., July 1, 1865. 5 10*

RELIEF FOR THE DEAF.—HASLAM'S SOUND-magnifying Tubes, for hearing in church or other public assemblies. Send for a descriptive pamphlet to 5 4* E. HASLAM, No. 32 John street, New York.

MUSICAL INSTITUTE, PROVIDENCE, R. I.—FALL Term commences August 24. Send for Catalogue and Circulars. Address EBEN TOURJEE, 5 2* Providence, R. I.

EMBREE & SPEAKMAN'S PATENT SWATHING MACHINE is a machine that every farmer needs that has grain to cut. State and County Rights will be sold very reasonable. For particulars address Box No. 201, Westchester, Chester Co., Pa. 5 5*

MANUFACTURERS' AND MECHANICS' SUPPLY Depot, N. E. corner of Third and Willow streets, Philadelphia, Pa. A large assortment of first quality Steel for sale at reduced rates, consisting of all sizes Cast, Shear, File, Auger, Fork, Blistered, Machinery, Tire, Axle, Pen, Sheet and other Steel. 5 3* ALBERT POTTS.

IRON PLANERS, LATHES, DRILLS, PRESSES, Saw-mills, Portable Engines, New second-hand Drill, do. Horse-power, do. Molding Machine, and other tools, will be sold low. Apply to WM. H. HOAG, No. 40 Cortland street. 5 2*

BOILER INCRUSTATIONS.—A MOST VALUABLE discovery and perfect remedy for the removal of scale in fresh and salt-water boilers. Has been thoroughly tried, with perfect success. High testimonials and circular furnished on application to 5 12* TEMPLE & FITCH, Bridgeport, Conn.

THE TENTH MECHANICS' EXHIBITION will commence at FANEUIL AND QUINCY HALLS, IN THE CITY OF BOSTON, ON WEDNESDAY, SEPTEMBER 20.
Contributions from all parts of the country of whatever is new, useful and beautiful in Mechanism and Art are solicited. 5 4

A GREAT CHANCE FOR PROFITABLE INVESTMENT—The State and County Rights of Gilbert's new Patent Coal and Ash Sifter, at great bargains. The cleanest, handsomest and most convenient coal and ash sifter in use. No dust.
3 5* R. BLAKE, No. 5 Tryon Row.

THE CELEBRATED KENTUCKY CIDER MILL—Patented Nov. 24, 1863. State, County or Shop Rights for Sale. For particulars address the patentee, THEO. SHARP, 3 5* Louisville, Ky.

THE EIGHTEENTH ANNUAL EXHIBITION OF THE Maryland Institute of Baltimore, for the Mechanic Arts, will commence on Monday Evening, the 2d of October, and continue to Monday Evening, the 30th of October. 1865.
The hall will be open for the reception of goods on Monday, the 25th of September.
Goods for Competition and Premium must be deposited before Thursday Night, the 28th of September.
Circulars, embracing details, may be had of the Actuary at the Institute.
Communications addressed to the undersigned, or Joseph Gibson, Actuary, will be promdtly attended to. W. W. MAUGHLIN,
3 3m Chairman Committee on Exhibition.

PLATINA—WHOLESALE AND RETAIL—FOR ALL purposes. H. M. RAYNOR, Importer, No. 748 Broadway, New York. Platinum Scrap of any sort purchased. 3 4*

FOR DANIELLS'S PLANING MACHINES, CAR MORTISING, Boring Machines, Car-Tenoning Machines, Car Planing and Beading Machines, Etc., address J. A. FAY & CO., Cincinnati, Ohio. 3 1y

FOR WOODWORTH PATENT PLANING AND MATCHING MACHINES, Patent Siding and Resawing Machines, address J. A. FAY & CO., Cincinnati, Ohio. 3 1y

J. A. FAY & CO.,
CINCINNATI, OHIO
Patentees and Manufacturers of all kinds of
PATENT WOOD-WORKING MACHINERY
of the latest and most approved description,
particularly designed for
Navy Yards, Ship Yards, Railroad, Car and Agricultural Shops, Mills, Etc.
Sash, Blind and Door, Wheel, Felly and Spoke, Stave and Barrel, Shingle and Lath, Planing and Resawing.
Warranted superior to any in use. Send for Circulars.
For further particulars address J. A. FAY & CO., Corner John and Front streets, Cincinnati, Ohio,
Who are the only manufacturers of J. A. Fay & Co.'s Patent Wood working Machinery in the United States. 3 1y

FOR SALE—ENGINE BOILERS, SHAFTING, HANGERS, Pulleys, Rubber Machinery, Belting, Bolts, and Machinery of all descriptions, and Factories bought and sold, at DAVIS'S MACHINERY YARD, No. 122 and 124 Hudson street, one block from Jersey City Ferry, foot of Courtlandt street, N. Y. 3 4*

STEAM GENERATORS AND ENGINES.—THE AMERICAN Safety Steam Engine Company are manufacturing Brayton's Patent Steam Generators and Engines. There is a saving of 25 per cent in fuel over ordinary engines and boilers and they cost but little to keep them in repair There is no possibility of exploding the generator. For particulars and circular address GEO. WOODMAN, Treasurer and Agent, 84 Washington st. Boston ,2 12*

N. C. STILES'S PATENT POWER FOOT AND DROP PRESSES.—Dies of every description made to order. Send for a circular. N. C. STILES & CO.,
1 52* West Meriden, Conn.

STEAM ENGINES—WITH LINK MOTION, VARIABLE automatic cut-off, of the most approved construction; Mill Gearing, Shafting, Hanger, Etc. Address M. & T. SAULT,
1 26* New Haven, Conn.

SMALL BEAM ENGINE.—I WILL SELL A BEAUTIFUL 2-horse beam engine, suitable for a small boat or light business, for $170 cash. Said engine is entirely new, and was made at odd times by a man "for the fun of the thing." The engine is complete, with feed pump, etc. No answers unaccompanied by stamp for return post noticed. EGBERT P. WATSON,
25 Box 773, N. Y.

HOWE SEWING MACHINE COMPANY.—ELIAS HOWE, Jr., President, 629 Broadway, N.Y. Agents wanted. 5

HORSE-SHOE NAIL MACHINE.—EUROPEAN PATENTS for Sale—Successful Machines for making Horse-shoe Nails are of recent American invention. They have not been introduced into Europe. Letters Patent have just been secured in France and Belgium by the inventor, for the best machine in use for this purpose. These Patents he proposes to sell in this country. He has also taken measures to obtain Patents for the Invention in Great Britain and other European States; all of which he will sell on liberal terms.
This is the machine now used by the Ansable Horse Nail Company, of Keeseville, N. Y., and the North-western Horse Nail Company, of Chicago, Ill.
For further information call on the subscriber, at No. 350 Pearl street, opposite Frankfort street, New York, office of the Mercantile Journal. [5 2*] D. DODGE.

FOR SALE—THE ENTIRE RIGHT OR STATE Rights of our Patent Adjustable Wrench. It has the advantages of the S-wrench. Is a very neat thing. Address PENNEY & THURSTAN Mechanic Falls, Me. 5 4*

FOR SALE.—THE PATENT RIGHT OF GARDNER'S Compensation Governor and Automatic Stop, for the New England States and California and Oregon. Address
5 5* ROBT. W. GARDNER, Quincy, Ill.

PATENT EXCHANGE—TO BUY OR SELL PATENTS call or address PATENT EXCHANGE,
5 tf No. 229 Broadway.

POWER FOR RENT.—WE WILL RENT SHOP Rooms, with from 1 to 100-horse power, as wanted. Terms very reasonable. Rooms light, airy, comfortable, and suited for every work. Heated by steam. Located in Baltimore. Address MERRILL PATENT FIRE-ARM CO., Baltimore. 5 8*

JOHN T. BURR, CONSULTING AND SUPERINTENDING Engineer, No. 222 Front street, New York. Drawings prepared for all kinds of steam and other machinery. Steam Engines and Machinist's Tools, new and second hand, for sale. Special attention devoted to Inventor's Drawings. 5 6*

FOR SALE—THE RIGHT FOR MY STONE GATHERER, either entire or by States. Illustrated in the SCIENTIFIC AMERICAN July 15, 1865. Address J. L. QUIMBY, Pleasant Grove, Pa. 5 4*

FOR FIRST-CLASS, EASTERN MADE, WOOD-working Machinery address J. A. FAY & CO., or E. C. TAINTER, succeeding partner, Worcester, Mass. 5 tf

VULCAN WORKS, BALTIMORE.—THIS WELL-known establishment is offered for sale, or would be leased for term of years, with the privilege of purchasing within a stated period. It is complete in all its departments, embracing Iron and Brass Foundries, Blacksmith, Machine, Boiler, Pattern and Carpenter Shops, Coppersmith, Etc. The tools and machinery, with powerful cranes and twisting apparatus, are many of them of recent construction, and all in complete order for the manufacture of Marine Engines of the heaviest class, and all other descriptions of machinery. The situation, in close proximity to the water, and near the business portion of the city, is unrivalled. The reopening of trade with the South will in a short time bring a full supply of orders from that direction, and the establishment has always commanded a fair portion of Government work and of the local trade. For furtner particulars address H. R. HAZLEHURST,
1 6* Vulcan Works, Baltimore.

PARTNER WANTED WITH $10,000.—ANY PERSON who, for health or pleasure, desires to reside the whole or part of the year in a tropical climate will find this an opportunity such as is seldom met with. Address CUBA, SCIENTIFIC AMERICAN Office. 2 4*

BOILER INCRUSTATIONS EFFECTUALLY PREVENTED by Winans' Powder, 10 years in use. No soda in it, consequently no foaming. H. N. WINANS, No. 11 Wall st. 2 4*

ANDREWS' PATENT OSCILLATING ENGINES.—Double and Single Engines, from ½ to 125-horse power, finished at short notice. These engines leave the shop ready for use, require no special foundation, are compact, light and simple, and economical of power. For descriptive pamphlets and price list address the manufacturers, W. D. ANDREWS & BRO.,
2 4*tf. No. 414 Water street, N. Y.

ANDREWS' PATENT CENTRIFUGAL PUMPS—CAPACITY from 90 to 40,000 gallons per minute. For draining and irrigating lands, wrecking, coffer dams, condensers, cotton, wool and starch factories, paper mills, tanneries, and all places where a large and constant supply of water is required, these pumps are unequalled. They are compact, require little power, and are not liable to get out of order. For descriptive pamphlet address
2 4*tf WM. D. ANDREWS & BRO., No. 414 Water street, N, Y.

PORTABLE ENGINES, SUITABLE FOR THE OIL regions, from 8 to 20-horse power, with large fire-place, independent steam feed pump, steam gage, and improved water heater. The most complete and best engines in the market. For particulars address WM. D. ANDREWS & BRO.,
2 4*tf No. 414 Water street, N. Y.

AGRICULTURAL AND MECHANICAL AGENCY, Havana.—EZRA K. DOD solicits consignments of and authority to contract for all articles of ready sale in the Cuban market, such as plows and other farm utensils adapted to cane culture, steam engines, boilers and mills, shovels, axes, saws, cane knives, gas fittings, brass and copper seamless pipes, cooking stoves for burning coke, animal coal for refining sugar, illuminating and lubricating oils, etc. Patents will be secured and introduced. References, New York—Messrs. Gebhard & Schuchardt, Moses Taylor and Thomas Downing; Philadelphia—Messrs. Merrick & Sons; Baltimore—Messrs. DeFord & Bros.; Boston—Thos. Oxnard, Esq. 2 4

INVENTORS' EMPORIUM, NO. 37 PARK ROW, N. Y. —New and useful inventions manufactured, introduced and sold on commission. Agents wanted. [24tf] RICE & CO.

WATER POWER—AT N. FALLS, N. Y., FOR 50 Mills.—Now ready, for sale, a lease, at half price of Patterson Power Leases. Renewable every 20 years for ever. Apply at No. 23 Courtlandt street, New York to HORACE H. DAY. 1 8*

HARTMANN & LAIST, CINCINNATI, OHIO; MANUfacturers of Glycerin Acetic Acid, Grape Sugar and Sirup. 1 26*

PORTABLE STEAM ENGINES.—THESE WORKS have lately increased their facilities for the manufacture of their so popular engines. Prices reduced to a peace standard. Fourteen feet and more of heating surface given to the nominal horsepower. Delivery to the Oil Regions by part navigation much prompter and cheaper than from more eastern points per railroad. Send for circular before buying F. WM. RAEDER,
1 12* Ames Iron Works, Oswego, N. Y.

NEW BOILER WORKS—LEHIGH BOILER WORKS, Allentown, Pa.—For the Manufacture of Boiler and Sheet-iron work of all descriptions, such as Locomotive, Flue, Tubular and Cylinder Boilers, Locomotive Tanks, Water Tanks, Steam and Blast Pipes, Chimneys, Etc. Also repairing of all kinds attended to with dispatch. All work done at these works is warranted to be of good material and well made. Part of the firm being Machinists, we are prepared to do out-door machine work, such as setting up engines and boilers, with steam and water pipes, and repairing generally.
1 8* NOBLE, RHODA & CO.

MILL STONE DRESSING DIAMONDS SET IN Patent Protector and Guide.—Sold by JOHN DICKINSON, Patentee and Sole Manufacturer and Importer of Diamonds for all Mechanical purposes. Also, Manufacturer of Glazier's Diamonds, No. 64 Nassau street, New York City. Old Diamonds reset. N. B.—Send postage stamp for Descriptive Circular of the Dresser. 24 12*

MACHINISTS' TOOLS, ENGINE LATHES, HAND Lathes, Planers, Upright Drills, Etc., of best material, and superior workmanship, manufactured and for sale by WM. M. HAWES & CO., Fall River, Mass. 24 9*

GROVER & BAKER'S HIGHEST PREMIUM ELASTIC Stitch Sewing Machines, 495 Broadway, New York. 1 tf

LUNKENHEIMER'S IMPROVED GLOBE VALVE; A complete assortment of Brass Work for Locomotives, Portable and Stationary Engines. For samples and catalogue address CINCINNATI BRASS WORKS,
11 XII 26* No. 13 East Seventh street, Cincinnati.

TRUE'S POTATO PLANTER DOES THE WORK OF 12 men. Rights for sale. J. L. TRUE, Garland, Maine. 25 10*

TO MANUFACTURERS AND EXPORTERS.—ALL articles of American manufacture which are exported to foreign countries are entitled to a drawback equivalent to the amount of tax paid at the time of manufacture under the Internal Revenue Law. We offer our services to secure the refunding of this amount, and will cheerfully furnish all necessary information. MERCHANT, OAKLEY & CO., Custom-house and Internal Revenue Brokers, No. 71 Broadway, Room No. 55. 1 8*

TO GAS COMPANIES.—FOR SALE AT THE ISLAND Works of the Gas Co., Washington, D. C. 1 Retort House, roof frame of iron, 141 feet long, 53 feet wide, with the slate attached.
All the Iron Work belonging to 28 benches, of 3 retorts each.
4 Washers, 18 inches diameter.
4 Purifyers of wrought iron, 5 ft. by 11 ft., with lids, etc.
2 8-inch Slide Valves.
1 5-foot Station Meter, together with sundry connections, the whole forming a complete Gas Station, in good order.
For examination apply to GEO. A. McILHENNY, Engineer of Gas Works, Washington, D. C.
For purchasing apply to B. H. BARTOL, Philadelphia. 23XIItf

HANCOCK'S PATENT STEAM BLOWER.—THIS instrument, after two year's use, has proved a perfect success. It is the cheapest appliance for increasing the steaming capacity of boilers where there is a defective draft, or where cheap fuel is required to be used, like the screenings of anthracite or bituminous coals, screenings from coke, tanner's spent bark sawdust, tanner's chips, shavings, etc. It requires no attachment to any other motor than the boiler; is noiseless, and requires no room available for other purposes. Send for a circular. F. W. BACON & CO.,
4 12* Agents, No. 84 John street, New York.

D. LAKE'S FLY-TRAP—ILLUSTRATED IN THE SCIENTIFIC AMERICAN of June 10, 1865. Sent by express on the receipt of $4.½ DAVID LAKE, Smith's Landing, N. J. 24 10*

TRIP HAMMERS.
Parties using or intending to erect Trip Hammers are invited to call and examine the Hotchkiss Patent Atmospheric Hammer, made by CHARLES MERRILL & SONS, No. 556 Grand street, New York. They are run by a belt; occupy 2½ by 4 feet space; strike 200 to 400 blows per minute, according to size, and, the hammer running in slides, each blow is square and in the same place. Die work can be done under them more rapidly than under a drop, and for swaging it is unequaled. They are very simple in their construction, under perfect control, and require much less power than any other hammer. Send for a circular illustrating the hammer, which gives full particulars. 1 tf

THEYSON & OGG, NO. 39 GREENE STREET, NEAR Grand, Machinists, Brass Finishers and Model Makers, Experimental Machinery. Indicators, Registers and Steam Gages of every kind accurately and promptly made. 1 8*

GRINDSTONES OF THE BEST QUALITY MANUfactured for Mechanics, Railroad Shops, Manufacturers and the trade. Address orders to F. M. STEARNS & CO.,
1 7* Berea, Cuyahoga Co., Ohio.

MACHINISTS' SUPPLIES, OF ALL DESCRIPTIONS, on hand for sale by LEACH BROS., 86 Liberty st., N. Y. 21 12*

CLARK'S PATENT FERRULES FOR LEAKY BOILER TUBES.—Illustrated No. 9, Vol. XII., SCIENTIFIC AMERICAN.
23 8* E. CLARK, No. 321 Spring street, New York.

2,000 BOLTS PER DAY CAN BE MADE ON one of PATENT MACHINES. Also Rivets and Spikes of all kinds
HARDAWAY & SONS,
Philadelphia, Pa.
REFERENCES.
Jas. Rawland & Co., Kensington Iron Works, Phila.
Tiers & Bradshaw, Mount Pleasant Foundery, 951 Beach st., Phila.
Jas. W. Landell & Co., 956, 58, 62 Beach st., Phila.
Chouteau, Harrison & Valle, Leclede Rolling Mill, St. Louis. 1 tf

WHEELER & WILSON, 625 BROADWAY, N. Y.—Lock-stitch Sewing Machine and Button-hole Machine. 5tf

SETS, VOLUMES AND NUMBERS.
Entire sets, volumes and numbers of SCIENTIFIC AMERICAN (Old and New Series) can be supplied by addressing A. B. C., Box No. 773, care of MUNN & CO., New York. 5 tf

SECOND-HAND MACHINERY FOR SALE, IN GOOD order.—One Drop 450 lbs. Hammer, one Drop 250 lbs. Hammer, one Trip Hammer, three Presses, two Edging Machines, two Milling Machines, one Burrs and Sharp Screw Machine, one Four-spindle Drill, one Three spindle Drill, one small Screw Machine.
5 6* WILLIAM M. HAWES & CO., Fall River, Mass.

WRIGHT'S PATENT FLOOR CLAMP, ACKNOWLEDGED by all to be the best in use. For circulars address HIRAM C. WRIGHT, Worcester, Mass. 5 6*

THE AMERICAN INSTITUTE HAVING ENGAGED the spacious Armory on Fourteenth street, in the City of New York, will hold their 36th Annual Fair from the 12th day of September to the 19th of October next. Articles for Exhibition will be received from the 6th to the 12th of September. The exhibition will consist solely of American Inventions, Machinery and Manufactures and Agricultural and Horticultural Productions. The time for a reunion of American Inventors, Manufacturers and Agriculturists was never more appropriate than the present. The American People, after vindicating their nationality and demonstrating the importance and magnitude of their Mechanical and Agricultural Resources, enter now upon a new career, when it becomes alike the duty and interest of every citizen to promote the reward of American Ingenuity and the encouragement of American Manufactures and Productions. Individuals and Companies engaged in these industries are invited to co-operate by contributing for exhibition the product of their skill and industry, thereby promoting and advancing the material prosperity of the country. Every indication promises to make this exhibition one of the grandest and most varied ever held in this country, while the managers are determined to use every effort toward the accomplishment of such a result. Machinery in motion will constitute the great feature of the Fair, and steam power will be provided. Premiums of Gold, Silver and Bronze Medals and Diplomas will, by competent and impartial judges, be awarded to those exhibitors whose articles shall be adjudged most meritorious. Special Premiums of Gold and Silver Medals, and Silver Cups and Plate will be awarded on such articles as are set forth in the circulars issued by the Board of Managers. All correspondence must be directed to Prof. S. D. TILLMAN, Sec. American Institute, New York City, and articles for exhibition to JOHN W. CHAMBERS, Clerk of American Institute, Armory 14th street, New York City, freight prepaid. 4 3 & 2eow

BOILER INCRUSTATIONS.
VULCAN IRON WORKS, CHICAGO, Feb. 9, 1865.
During the past two months we have been using the Anti-incrustation Mixture, prepared by Mr. A. G. Cross. From our experience we are satisfied of the great utility of the preservation to overcome the universal evil of incrustation of Steam Boilers, stopping of leakages, and proving a general protection to the iron of the boiler. We find it a useful article, and most cheerfully recommend its use.
HALL, ATKINS & Co.
This preparation is in use in one hundred different establishments in Chicago. P. W. GATES, Pres., Eagle Works Manufacturing Co., and GEO. DUNBAR & CO., Nos. 19 and 21 Dearborn street, Chicago, Agents. 4 3z*

MACHINERY.—S. C. HILLS, No. 12 PLATT STREET New York, dealer in Steam Engines, Boilers, Planers, Lathes Chucks, Drills, Pumps; Mortising, Tenoning and Sash Machines; Woodworth's and Daniels's Planers, Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting Oil, &c. c

THOMAS ANTISELL, M. D., ANALYTICAL AND Consulting Chemist (Late Chemical Examiner in U. S. Patent Office. Washington, D. C.) Chemical investigations made and advice given on unperfected inventions. Analysis made; Ores and Mineral Lands Examined. Address Georgetown, D. C. 4 12*

BOLTS, NUTS, WASHERS, SET SCREWS, COACH Screws and Machine Screws, constantly on hand for sale by LEACH BROTHERS, No. 86 Liberty street, New York. 21 12*

PARTIES DESIRING TO CONTRACT FOR THE manufacture of Wood and Iron Work, Agricultural Implements, or any article of machinery, can correspond with TITUS & BOSTWICK, R. R. Iron Works, Ithaca, N. Y. 3 4*

FOR PATENT SCROLL SAWS, PATENT POWER Mortising Machines, Tenoning, Boring and Doweling Machines, Sash, Blind and Door Machinery, of the latest and most improved description, address J. A. FAY & CO., Cincinnati, Ohio. 6dtf

GALVANIZED IRON.—GALVANIZING DONE WITH despatch and castings furnished if desired, either Malleable or Gray Iron. Address WILCOX & HALL, Middletown, Conn.
Vol. XI. 23 26 eow*

AMESSIEURS LES INVENTEURS.—AVIS IMPORTANT Les inventeurs non familiers avec la langue Anglaise, et qui préféreraient nous communiquer leurs inventions en Français, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront regues en confidence. MUNN & CO.,
Scientific American office No 37 Park Row, New York.

THE BISHOP GUTTA-PERCHA COMPANY, EXCLUSIVE Manufacturers in United States of every description of Pure Gutta-percha Goods, such as
Submarine Telegraph Cables,
Insulated Wire, of all kinds, for blasting, mining, and electric telegraph use,
Chemical Vessels for electroplating, etc.,
Photograph Baths and Dishes,
Tissue Sheet, of superior quality, for hatters, artificial flower makers, etc.,
Tubing for Pure Water, Beer, Soda, etc.
Bosses for Flax Machinery of all sizes—a very superior article; with a great variety of other articles made to order. Apply at office and sales room, No. 201 Broadway. SAML. C. BISHOP, General Agent.
20 12*

OIL! OIL! OIL
For Railroads, Steamers, and for machinery and Burning PEASE'S Improved Engine Signal, and Car Oils, indorsed and recommended by the highest authority in the United States and Europe, This Oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior to and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The "Scientific American," after several tests, pronounces it "superior to any other they have used for machinery." For sale only by the Inventor and Manufacturer, F. S. PEASE, No. 61 and 63 Main street, Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the world. 1tf

IRON PLANERS, ENGINE LATHES, DRILLS AND other machinists' tools, of superior quality, on hand and finishing, for sale low. For description and price address NEW HAVEN MANUFACTURING COMPANY, New Haven, Conn. 1tf

TWIST DRILLS—A FULL ASSORTMENT, OF ALL Sizes, Stubb's Wire and Machinists' Drills, on hand for sale by LEACH BROTHERS, No 86 Liberty street, New York. 20 12*

DAMPER REGULATORS—GUARANTEED TO EFFECT a great saving in fuel, and give the most perfect regularity of power. For sale by the subscribers, who have established their exclusive right to manufacture damper regulators, using diaparagms or flexible vesseis of any kind CLARK'S PATENT STEAM AND FIRE REGULATOR COMPANY, No. 117 Broadway, New York 8XII. 26*

CHEAP SOAP.—SAPONIFIER OR CONCENTRATED LYE—The Ready Family Soap-maker. Soap for three cents per pound. See SCIENTIFIC AMERICAN March 18, 1865. Caution—Original, Genuine and Patented article is put up in one-pound iron cans, all others being counterfeit. Manufactured by PENNSYLVANIA SALT MANUFACTURING CO., Office Pitt street and Duquesne way, Pittsburgh, Pa. 1 8*

$125 A MONTH!—AGENTS WANTED EVERYwhere to introduce the improved Shaw & Clark Family $20 Sewing Machine, the only low-price machine in the country which is licensed by Grover & Baker, Wheeler & Wilson, Howe, Singer & Co. and Bachelder. All other machines now sold for less than forty dollars each are infringements, and the seller and user are liable to fine and imprisonment. Salary and expenses, or large commission, allowed. Illustrated circulars sent free. Address SHAW & CLARK, Biddeford, Maine. 20 13*

$70 A MONTH!—I WANT AGENTS EVERYwhere, at $70 a Month, expenses paid, to sell Fifteen Articles the best selling ever offered. Full particulars free. Address OTIS T. GAREY, Biddeford, Maine. 20 13*

ESTABLISHED 1826.—WORLD'S FAIR AND AMERICAN Institute Prize Medal Turning Lathes for Foot and Steam Power, manufactured by JAMES STEWARTS SON, No. 252 Canal street, New York. Amateur's Turning Lathes made to order
23 10*

FOR WOODWORTH PATENT PLANING AND MATCHING MACHINES, Patent Siding and Resawing Machines address J. A. FAY & CO., Cincinnati, Ohio. 3 1y

PORTABLE STEAM ENGINES—COMBINING THE maximum of efficiency, durability, and economy with the minimum of weight and price. They are widely and favorably known more than 300 being in use. All warranted satisfactory or no sale. Descriptive circulars sent on application. Address J. C. HOADLEY & CO., Lawrence, Mass. 1 tf

NEEDLES.—SAND'S NEEDLE CO., MANUFACTURERS of Machine Spring Needles. These needles are made by patented machinery, and consequently we claim a uniformity of spring which cannot be obtained in the ordinary way of making. Address, with two samples inclosed, SAND'S NEEDLE COMPANY, Laconia, N. H. 1 tf

$2,000 A YEAR MADE BY ANY ONE WITH $15. Stencil Tools. No experience necessary The Presidents, Cashiers and Treasurers of three Banks indorse the circular. Sent free with samples. Address The American Stencil Tool Works, Springfield, Vt. 1 tf

CAN I OBTAIN A PATENT?—FOR ADVICE AND instructions address MUNN & CO., No. 37 Park Row, New York, for TWENTY YEARS Attorneys for American and Foreign Patents Caveats and Patents quickly prepared. The SCIENTIFIC AMERICAN $3 a year. 30,000 Patent Cases have been prepared by M. & Co.

REYNOLDS' TURBINE WATER WHEELS.—COMPETENT men are employed to measure streams, make plans and put in flumes, wheels, and gearing. TALLCOT & UNDERHILL No. 170 Broadway, New York. 1 XII.1y*

HOLSKE & KNEELAND, MODEL MAKERS. PATENT Office Models, Working Models and Experimental Machinery, made to order at 528 Water street, near Jefferson street New York. Refer to Munn & Co., SCIENTIFIC AMERICAN Office. 1tf

ENGINEERING SCHOOL, FRANKLIN, DEL. CO., N. Y., has full means for instruction in Mathematics, Drawing, Mechanics, Physics, Chemistry, and all applications, with full sets Eng. Instruments, Chem. Apparatus, Etc $185 pays Board and Tuition one year. G. W. JONES, A. M., Prin. 1 10*

SCREWS.—COMSTOCK, LYON & CO., OFFICE NO. 74 Beekman street, N. Y., manufacture Turned Machine Screws (a superior article to a headed screw), of all sizes under ½ inch in diameter, 3 inches long. Also Steel, Iron and Brass Screws for Guns, Pistols, Instruments, Trusses, Artificial Limbs, Etc., of the finest quality, to order. 1 11*

Zur Beachtung für deutsche Erfinder.

Die Unterzeichneten haben eine Anleitung, die Erfindern das Verhalten angibt, um sich ihre Patente zu sichern, herausgegeben, und verabfolgen solche gratis an dieselben.

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu adressiren an

Munn & Co.,
37 Park Row, New-York.

Auf der Office wird deutsch gesprochen.
Daselbst ist zu haben:

Die Patent-Gesetze der Vereinigten Staaten,

nebst den Regeln und der Geschäftsordnung der Patent-Office und Anleitungen für den Erfinder, um sich Patente zu sichern, in den Ver. Staaten sowohl als in Europa. Ferner Auszüge aus den Patent-Gesetzen fremder Länder und darauf bezügliche Rathschläge; ebenfalls nützliche Winke für Erfinder und solche, welche patentiren wollen.

Preis 20 Cts., per Post 25 Cts.

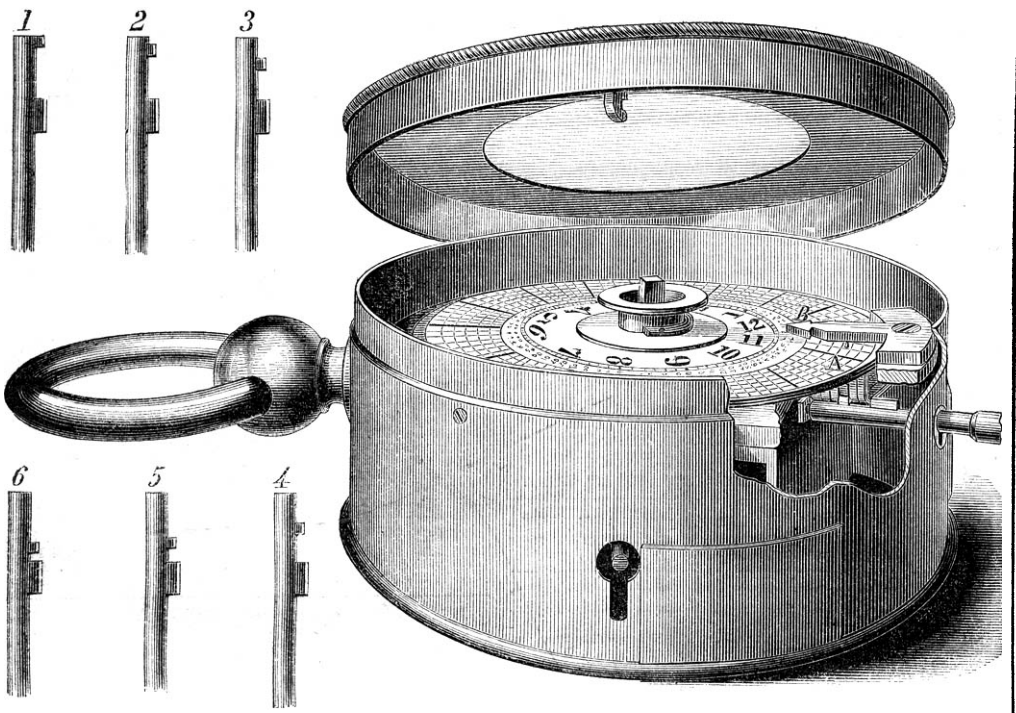
Improved Watchman's Time-Detector.

All large corporations or manufacturing concerns employ watchmen, who look to the safety of the several buildings, and are expected to be vigilant in guarding the interests committed to their charge. Property of immense value is thus at the mercy, so to speak, of one man; for if he is neglectful of his duty, he is not only dishonest, but jeopardizes the daily bread of numberless persons who may have funds invested in the concern.

To hire one watchman to look after the other would not be a very wise proceeding, for by collusion they might set at naught all such precautions. Recourse is therefore had to machinery. Silent, insensate wheels and springs. By the judicious combination of these, tales can be told, which results in the dismissal of the untrustworthy servant, or his retention and reward if found worthy. "Watch Clocks," as these machines are called, are common, and the principal feature of novelty, is a system of steel pins fitting in holes in a plate rotated by the clock-works. At a certain minute, every half hour, the watchman comes to the counting room, or other post where the clock is set, and pulls a wire. This wire connects with mechanism, and the act causes a pin to be driven in a hole, and so on every thirty minutes through the night. Thus in the morning, when the superintendent comes, he unlocks the clock and sees at a glance if the watchman has done his duty, for if a pin is missing it shows that the man was not at his post at that time.

In the engraving published herewith we present a view of a time-detector which has this advantage over the clock—it is carried by the watchman into every room he may visit, and shows exactly at what time he was at certain places if he does his duty. This obviates the necessity of going long distances to drive a pin, and is an advantage to the watchman who desires to be faithful, but through having to go so far sometimes arrives too late. Besides it is less expensive to employers and is perfectly reliable.

The broken out portion of the watch shows the mechanism which operates the pin which pricks the paper, for the time is indicated in this way instead of driving a pin in a hole as usual. At A, there are a number of sliding bars which connect with the pricking point, so that by turning around the key the ward in it strikes a certain bar and penetrates the dial paper, B. As this can only be done at a certain time, it follows that a perfect record will be kept of each operation. The small figures are views of different keys, there being several of them. Two patents have been granted on this invention through the Scientific American Patent Agency, viz. on Jan, 1, 1861, and June 6, 1865. For further information address the inventor, J. E. Buerk, Box 1,057, Boston, Mass.



BUERK'S WATCHMAN'S TIME-DETECTOR.

Railroad Racing.

Some time ago we published the following paragraph:—

"There are some lines of railroad in this country running side by side. The Morris and Essex and the New Jersey Transportation Company are examples. Trains on these roads start at the same hour and for three or four miles run side by side, so close that passengers reach out of the windows and shake hands with each other when running 25 miles an hour."

We now learn through the New York *Times* that the Morris and Essex Railroad Company have ordered their engine-drivers to suspend the amusement of trying speed with the New Jersey Central engines on the meadow between the Hackensack and the Passaic rivers. It is now ordered, by both companies, that the train nearest to the 1,500-feet signal posts, as they approach either river, shall push ahead, and the one in the rear shall follow at such rate as to avoid even the appearance of racing. The railroads have done a simple act of justice to themselves and the public. It is well.

A Disease Among the Silk Worms.

The London *Pall Mall Gazette* says: "The silk-breeders of France are, we are told, in a position of the greatest distress. A strange disease, which has re-appeared among the worms from time to time—notably in 1688 and 1710—has, since 1860, recommenced its ravages, till the price of seed has risen ten fold, and the demand for mulberry leaves has so fallen off that the planters threaten to cut down the trees and use the lands for some more profitable cultivation. The disease shows itself, according to a petition analyzed in the *China Telegraph*, just as the worm is about to cocoon, so that the breeder has the trouble of rearing for nothing, and has, to purchase seed, as it were, in the dark.

Repeated experiments seem to prove that the only seed which can be trusted is from Japan, and the breeders therefore, pray the State to aid them by bringing home their supplies in men-of-war. It seems probable that this request will be granted, and also that the evil which has spread through all silk growing countries, except Japan, is not temporary, but may last as long as the potato rot and the odium. The real obstacles to silk-growing seems to be the slow growth of the mulberry. The worms will live and work in most countries, but they want mulberry leaves, and nobody is willing to plant orchards which will not begin to bear for five-and-twenty years. It would be no matter of surprise if silk in the next generation became as costly as under the Roman empire, and a silk dress as complete a test of wealth as it was two hundred years ago.

TO

INVENTORS, MECHANICS, AGRICULTURALISTS.

THE ANNUAL

PROSPECTUS,

OF THE

Scientific American.

THE CHEAPEST AND BEST

MECHANICAL JOURNAL IN THE WORLD,

A NEW VOLUME OF WHICH COMMENCED

JULY 1, 1865.

This valuable journal has been published nineteen years, and during all that time it has been the firm and steady advocate of the interests of the Inventor, Mechanic, Manufacturer and Farmer and the faithful chronicler of the

PROGRESS OF ART, SCIENCE AND INDUSTRY

The SCIENTIFIC AMERICAN is the largest, the only reliable, and most widely-circulated journal of the kind now published in the United States. It has witnessed the beginning and growth of nearly all the great inventions and discoveries of the day, most of which have been illustrated and described in its columns. It also contains a WEEKLY OFFICIAL LIST OF ALL THE PATENT CLAIMS, a feature of great value to all Inventors and Patentees. In the

MECHANICAL DEPARTMENT

a full account of all improvements in machinery will be given, Also, practical articles upon the various Tools used in Workshops and Manufactories.

HOUSEHOLD AND FARM IMPLEMENTS;

this latter department being very full and of great value to Farmers and Gardeners; articles embracing every department of Popular Science, which everybody can understand.

WOOLEN, COTTON AND OTHER MANUFACTURING INTERESTS will have special attention. Also, Fire-arms, War Implements, Ordnance, War Vessels, Railway Machinery, Mechanics' Tools, Electric, Chemical and Mathematical Apparatus, Wood and Lumber machines, Hydraulics, Pumps, Water Wheels, etc.

STEAM AND MECHANICAL ENGINEERING

will continue to receive careful attention, and all experiments and practical results will be fully recorded.

PATENT LAW DECISIONS AND DISCUSSIONS

will, as heretofore, form a prominent feature Owing to the very large experience of the publishers, Messrs. MUNN & Co., as SOLICITORS OF PATENTS, this department of the paper will possess great interest to PATENTEES AND INVENTORS.

The Publishers feel warranted in saying that no other journal now published contains an equal amount of useful information while it is their aim to present all subjects in the most popular and attractive manner

The SCIENTIFIC AMERICAN is published once a week, in convenient form for binding, and each number contains *sixteen pages* of useful reading matter, illustrated with

NUMEROUS SPLENDID ENGRAVINGS

of all the latest and best inventions of the day. This feature of the journal is worthy of special notice. Every number contains from five to ten *original engravings* of mechanical inventions, relating to every department of the arts. These engravings are executed by artists specially employed on the paper, and are universally acknowledged to be superior to anything of the kind produced in this country

TERMS OF SUBSCRIPTION.

Per annum.....$3 00
Six months.....1 50
Four months.....1 00

To clubs of ten or more the subscription price is $2 50 per annum

This year's number contains several hundred superb engravings, also, reliable practical recipes, useful in every shop and household. Two volumes each year, 416 pages—total, 832 pages. SPECIMEN COPIES SENT FREE. Address,

MUNN & CO., Publishers,
No. 37 Park Row, New York City

PATENT AGENCY OFFICE.

MESSRS. MUNN & CO. have been engaged in soliciting American and Foreign Patents for the past eighteen years. Inventors who wish to consult with them about the novelty of their inventions are invited to send forward a sketch and description. If they wish to put their applications into Munn & Co.'s hands for prosecution they will please observe the following rules:—

Make a substantial model, not over one foot in size. When finished, put your name upon it, then pack it carefully in a box, upon which mark our address; prepay charges, and forward it by express. Send full description of your invention, either in box with model, or by mail; and at the same time forward $16, first patent fee and stamp taxes. As soon as practicable after the model and funds reach us, we proceed to prepare the drawings, petition, oath and specification, and forward the latter for signature and oath.

Read the following testimonial from the Hon. Joseph Holt, formerly Commissioner of Patents, afterwards Secretary of War, and now Judge Advocate General of the Army of the United States:—

MESSRS. MUNN & CO.:—It affords me much pleasure to bear testimony to the able and efficient manner in which you discharged your duties as Solicitors of Patents, while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and I doubt not justly deserved) the reputation of energy, marked ability, and uncompromising fidelity in performing your professional engagements.

Very respectfully, your obedient servant,
J. HOLT.

For further particulars see advertisement inside, or send for Pamphlet of Instruction. Address MUNN & CO.,
No. 37 Park Row, New York City.

FROM THE STEAM PRESS OF JOHN A. GRAY & GREEN